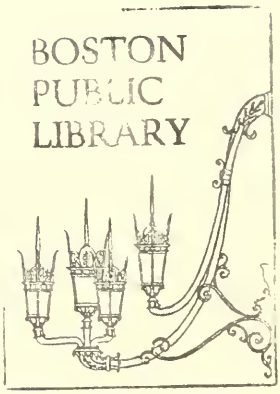
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TUFTS UNIVERSITY AND
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FACILITIES MASTER PLAN
1982-1992

PRELIMINARY SUBMISSION

OCTOBER 1982

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TUFTS UNIVERSITY AND

NEW ENGLAND MEDICAL CENTER

FACILITIES MASTER PLAN

1982-1992

PRELIMINARY SUBMISSION

OCTOBER 1982

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Tufts University and New England Medical Center
Facilities Master Plan 1982 - 1992
Executive Summary

Tufts University (Health Sciences Campus) and New England Medical Center have prepared an update of their Facilities Master Plan. The report begins with a summary of major facility changes that have been made since the development of the 1968 Joint Master Plan of the two institutions. The goals and objectives guiding Master Plan Development for the two institutions are described. The report then focuses on the facilities changes that are planned for the next ten years: 1982 - 1992.

Chapter One: Introduction

The Tufts Health Sciences Schools and New England Medical Center are located in the South Cove area of Boston, adjacent to Chinatown and the Theater District and a short distance from the intersection of two major highways entering Boston from the West, North and South. Over 8,000 faculty, staff, and students work and study at Tufts and New England Medical Center, which together comprise one of the major academic health centers in the City of Boston.

The Health Sciences Campus is one of the three locations of Tufts University. The main campus in Medford is the site of the liberal arts undergraduate and graduate programs, and the Grafton campus is the site of the large animal veterinary facilities. A major focus of the educational programs for the Health Sciences Schools is the network of associated hospital programs serving as teaching sites for the clinical years. New England Medical Center, a 452-bed specialty referral hospital, also has close educational and clinical relationships with many associated hospitals and health centers throughout Massachusetts and the other New England states.

Chapter Two: Chronology of Tufts and NEMC Facility Master Plan Development: 1968-1982

1. Several factors encouraged facility planning activities in the mid-1960's:

   (a) The establishment of a campus-wide Planning Office.
   (b) The merger of the Boston Dispensary, the Boston Floating Hospital, and the New England Center Hospital in 1965, to form the New England Medical Center Hospitals (later modified to New England Medical Center).
   (c) The growing need of the Tufts University Medical and Dental Schools for facility improvement and program consolidation.

2. The Architects Collaborative (TAC) of Cambridge prepared a Joint Master Plan during the period of 1965-1968. The land use proposed in the Plan was based on a Cooperation Agreement signed in 1966 by Tufts-New England Medical Center and the Boston Redevelopment Authority (BRA).

3. The 1968 Master Plan addressed Tufts and NEMC facilities replacement and modernization in a comprehensive way, and provided a phased-in process of renewal.

4. Stage 1A of the clinical facilities plan (now the Proger Building) and the Dental Health Sciences Building were completed in 1973. The new Tremont Street Parking Garage also opened that year.

5. A revised version of 1968 Master Plan was submitted in 1974, the same year that NEMC submitted its Determination of Need application for the 1B Project (now the New Floating Hospital Building). This Project was finally approved in 1977 and

construction was started in 1979. With this revision of the Master Plan, a sizeable portion of land designated for our new development was eliminated.

6. In 1977, planning for a new Tufts University School of Veterinary Medicine began (first class in 1979) and a program was completed for the proposed Health Sciences Education Building.

7. The U.S. Department of Agriculture was designated as the developer of the new Human Nutrition Research Center in 1978. Construction of this facility was started in 1980.

8. In 1982, Tufts received Federal funding award for Health Sciences Education Building and NEMC received Determination of Need and FHA approval for development of the Biewend Ambulatory Care Center.

9. Formal dedication ceremonies were held in 1982 for the NEMC New Floating Hospital Building and U.S.D.A. Human Nutrition Research Center.

Chapter Three: Program Goals Guiding Facilities Master Plan Development: 1982 - 1992

The central goal guiding the Facilities Master Plan update is the commitment to continuing the present missions of the Tufts Health Sciences Schools and New England Medical Center. These missions include the provision of tertiary-level patient care services, excellence in research, and a leadership role in service and education. Guided by these missions, a review of program needs in relation to existing facilities was conducted by both institutions. This review led to the development of the following program and facility goals:

1. Renovation, modernization and replacement of existing facilities in order to continue our present missions.

2. Development of modern educational and library facilities equipped with state-of-the-art information management and technology.

3. Development of innovative research programs in cancer, nutrition,and cardiovascular disease in response to national priorities.

4. Development of improved management strategies, and expanded support for clinical and basic science research.

5. Expansion and improvement of community and public areas, including pedestrian walks, plazas and commercial shops.

6. Expansion of parking facilities for patients, visitors, faculty, staff, and students.

7. Joint development of housing sites for families in the community, students and employees.

Chapter Four: Chronology of Planned Facility Changes: 1982 - 1992

1. The following changes are planned to take place in 1982-1985:

NEMC

- Completion of Biewend Ambulatory Care Center and Shuffle Space components of the Clinical Facilities Replacement Plan. The Shuffle Space projects address the reuse of space vacated by services moving into the New Floating and the Biewend ACC buildings. These projects accomplish the goal of centralizing and consolidating critical care and ambulatory services.

- Beginning of construction of Nuclear Magnetic Resonance (NMR) facility and Tunnel Building. NMR is a new diagnostic procedure that significantly improves diagnostic accuracy and is a high priority for acquisition and installation in 1985.

  The Tunnel building is proposed to be located in the underground area between the Human Nutrition Research Center and the New Floating Hospital Building. It will provide space for a direct interior connection between the two buildings for movement of supplies, staff and patients, as well as space for NEMC support functions.

Tufts

- Completion of Health Sciences Education Building. This Building will contain the University's Health Sciences Library, information management and dissemination technologies, microfilm and audiovisual services, document center, auditoria, classrooms, and administrative offices.

- Renovation of Boston School of Occupational Therapy space for biomedical research space.

Joint Projects

- Renovations of the 15 and 35 Kneeland Street Buildings. The 15 Kneeland Street Building will provide much needed research space, with a special focus on multi-disciplinary projects. The 35 Kneeland Street Building will provide space for administrative offices displaced from Tufts and NEMC buildings because of other facility developments addressed in this Master Plan.

2. The following changes are planned to take place in 1986-1992:

NEMC

- Completion of NMR and Tunnel Buildings.

- Construction of 1C Building, which will include a new Emergency Room (E.R.) and replacement of beds. The present Emergency Room is located in the Rehabilitation Building which is quite remote from the buildings which house the acute care services. A major goal is the replacement of the functionally outmoded nursing units currently located in the Pratt-Farnsworth Buildings.

  Centralized support services and a new main entrance are also included in the 1C Building plan. The proposed main entrance will be located at the intersection of the Proger Building, the New Floating Building, and the planned 1C Building, which together form the nucleus of the New England Medical Center.

  The 1C Building will be constructed in two phases. Phase I will begin in 1986 and will include: (a) services now located where Phase II of 1C will be built; (b) several floors of parking to replace surface parking spaces lost due to development on the campus. Phase II will be constructed in 1987-1989 and will include the Emergency Room, replacement beds, psychiatry beds, radiology, and support services.

Tufts

- Completion of space reallocation as a result of occupancy of Health Sciences Education Building. This project will address the reuse of space vacated by departments moving into the new HSEB.

- Construction of the Posner Lot Research Building, including commercial space on the ground floor and 11 floors of Veterinary School teaching and research, central animal facility, and basic science research labs.

- Infill Building space allocation. The Infill Building, to be located in the space between the South Cove and M&V Buildings, will consolidate Basic Science Departments and provide a warehouse and loading dock core for the four existing buildings. This facility will provide needed, contiguous space for crowded research areas in the surrounding buildings as well as modern facilities for materials management and storage.

3. Proposed site amenities and community areas for the campus include the following:

   - Campus boulevard along Harrison Avenue.
   - Posner Plaza between Posner Hall and new research building.
   - HSEB courtyard opening off Harrison Avenue.
   - Pedestrian route from Tremont Street to Tyler Street.
   - Roof terraces on new buildings facing Tyler Street.
   - Floating Hospital Plaza between the Nutrition Building and the Floating Hospital.
   - Alternative plans for recreation facilities are being explored, including development of an athletic center on top of the Dental Building.

4. The Master Plan identifies several sites for new street level commercial development, including 15 and 35 Kneeland Street and the new Posner Research Building.

5. The on-going process for joint Tufts, NEMC, and community development of new housing sites is discussed. One of the options being explored is the conversion of soon-to-be-vacated garment factory buildings into housing units.

6. The Master Plan describes the plans being explored to supplement parking spaces to be available on campus during the next ten years. Several options offsite are being investigated, including renting additional spaces and building a new parking garage south of the Massachusetts Turnpike.

Chapter Five: Summary and Conclusion

This chapter presents a summary of the major points in the Joint Facilities Master Plan, and discusses how the first stages of the 1982-1992 Master Plan will be implemented.

1. INTRODUCTION

New England Medical Center and Tufts University have prepared an update of their Facilities Master Plan for the ten year period from 1982 to 1992. This report also summarizes the major events that have occurred since the development of the 1968 Joint Master Plan of the two institutions. The Master Plan update has been developed for submission to the Boston Redevelopment Authority (BRA) and for discussions with interested community groups.

The Tufts Health Sciences Schools and New England Medical Center are located in the South Cove area of Boston, adjacent to Chinatown and the Theater District and a short distance from the South Station Railroad complex (Exhibit 1.1). As shown in Exhibit 1.2, the Tufts and New England Medical Center (NEMC) campus is also situated at the junction of the Massachusetts Turnpike and the Southeast Expressway, two major highways entering Boston from the West, North, and South.

Tufts and the New England Medical Center comprise one of the major academic health centers in the City of Boston. Over 8,000 faculty, staff, and students work and study on the campus. The Tufts University Health Sciences Schools located here include the Medical School, Dental School, Veterinary Medicine School, and the Sackler School of Graduate Biomedical Sciences. Also part of the Tufts Health Sciences complex is the U.S.D.A. Human Nutrition Research Center. In addition to its Boston campus, Tufts University also has a campus in Grafton, which houses the large animal clinical facilities of the Veterinary Medicine

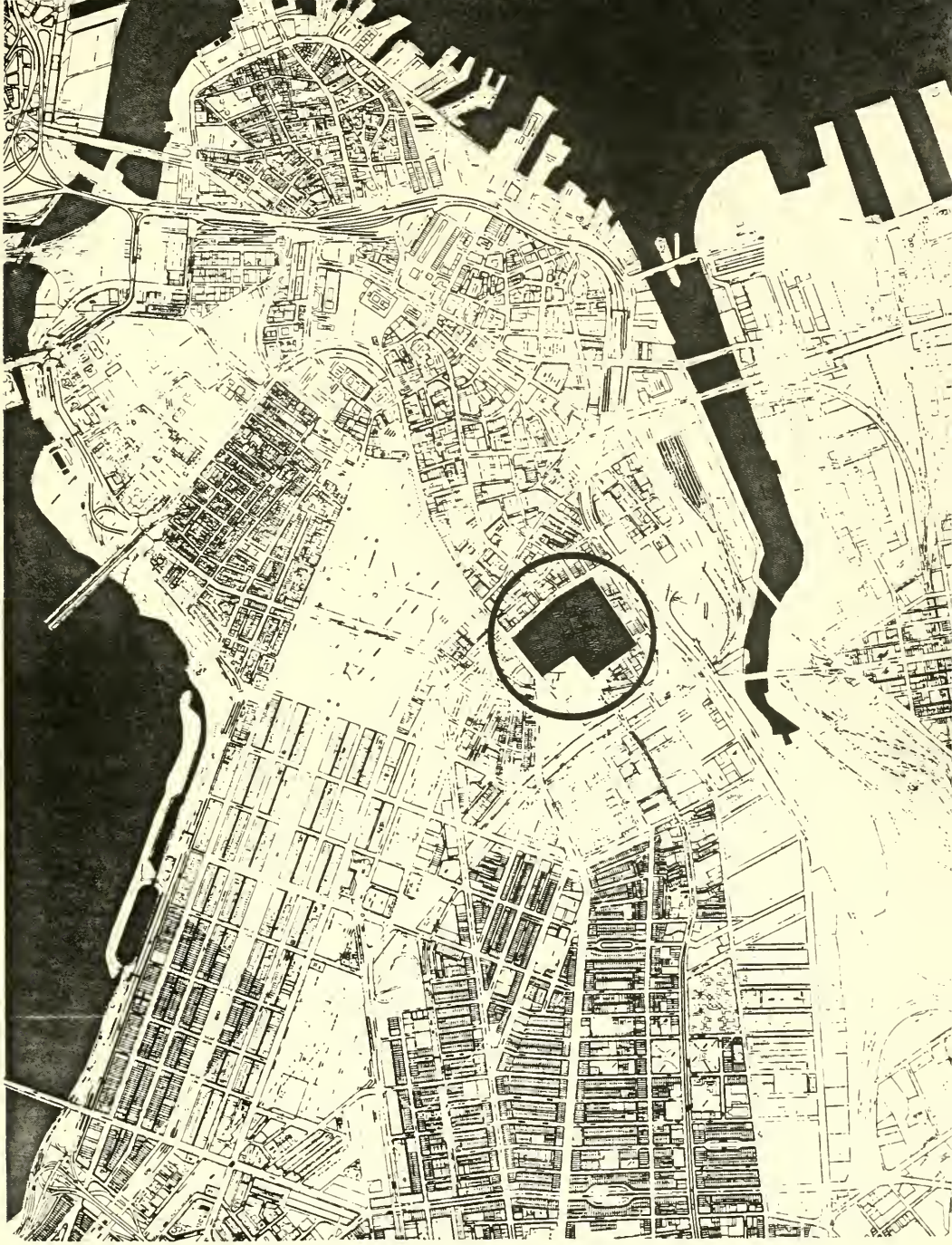
program, and the University campus in Medford which is the site for the Liberal Arts undergraduate and graduate programs as well as the School of Engineering, the Fletcher School of Law and Diplomacy and the School of Nutrition. A major aspect of the educational programs for the Health Sciences Schools is the network of associated hospitals serving as teaching sites for the clinical years. This network includes major clinical facilities throughout Boston and its suburbs as well as hospitals and medical centers in Western Massachusetts and Rhode Island. The Angell Memorial Hospital in Jamaica Plain serves as the small animal facility for the Veterinary School. Our program in Gerontology is based at the St. Elizabeth's Hospital in Brighton.

New England Medical Center is a 452-bed referral center specializing in the diagnosis and treatment of serious illnesses in patients of all ages. The Medical Center is composed of several institutions with a long tradition of excellence in health care. These health care institutions, The Boston Dispensary, Boston Floating Hospital, and Pratt Diagnostic Clinic/New England Center Hospital were consolidated in 1965 as the New England Medical Center Hospitals (later modified to the New England Medical Center).

The Tufts Health Sciences Schools and New England Medical Center also have close relationships with many hospitals and programs throughout Massachusetts and the other New England states. These linkages help to provide a clinical and educational environment that is noted for its excellence in patient care, education, and research.

The present facilities and buildings of the Tufts Boston campus and New England Medical Center are described in detail in Appendix 1. This update of the Facilities Master Plan contains four subsequent chapters.

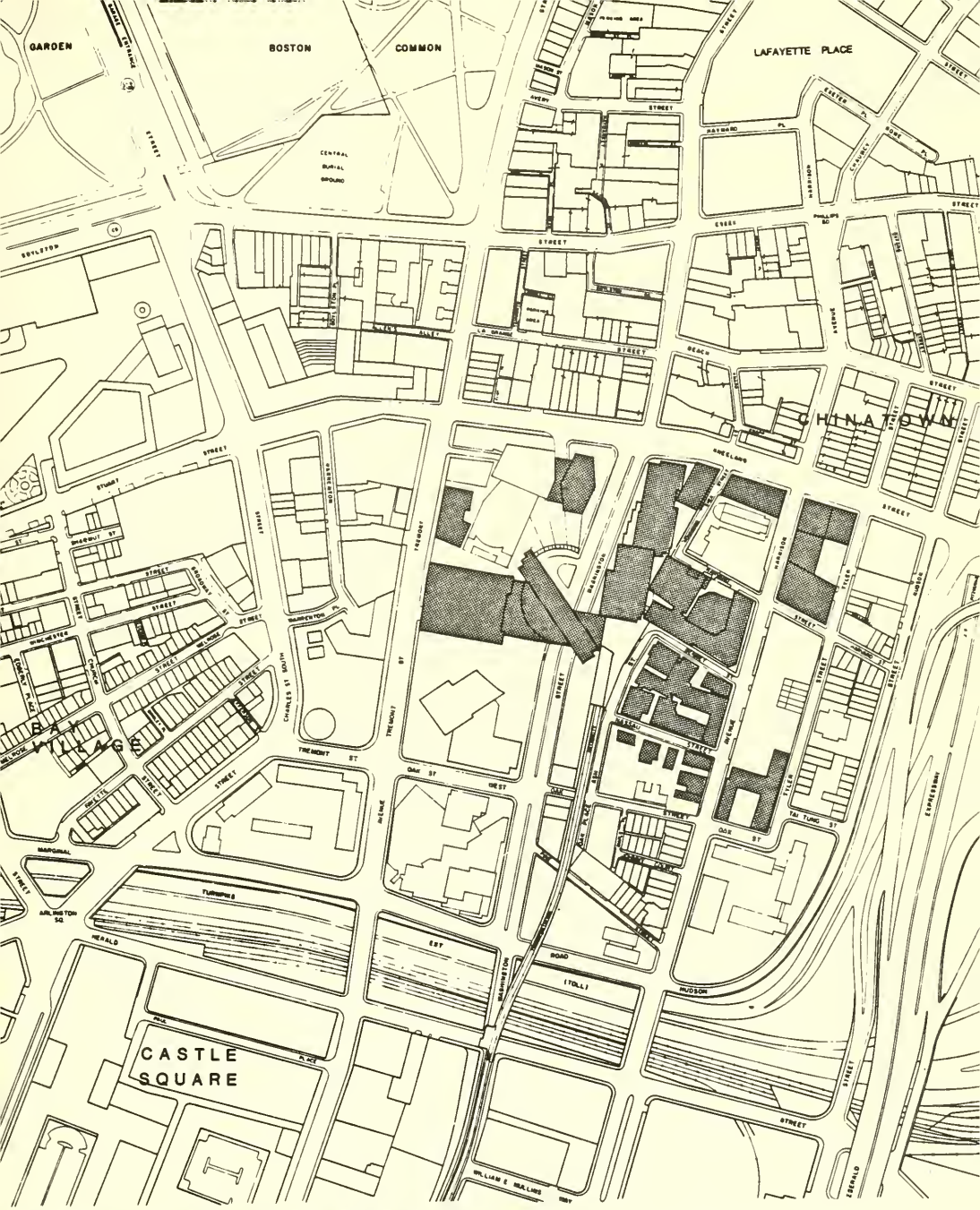
Chapter Two includes a chronology of facilities development events from 1968 through the present, and describes the evolutionary nature of our planning process. The 1968 Master Plan for New England Medical Center



TUFTS UNIVERSITY AND NEW ENGLAND MEDICAL CENTER

FACILITIES MASTER PLAN • CAMPUS LOCATION PLAN

EXHIBIT 1.1



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CILITIES MASTER PLAN • NEIGHBORHOOD PLAN 1982

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EXHIBIT 1.2

and the Tufts University Health Sciences Schools, and the land use plan agreed to by the BRA in 1966, are outlined in this chapter.

Chapter Three presents the program goals which have guided the development of the Facilities Master Plan for 1982-1992. This chapter addresses long-term goals of Tufts University and New England Medical Center in areas such as research, education, patient care, community development, and parking.

Chapter Four includes a detailed description of changes planned in facilities in the next ten years at the Tufts Health Sciences Campus and New England Medical Center. Each contemplated project is described in terms of its need, function, and design, including all planning details that are available at the present time.

Finally, Chapter Five presents a summary and conclusion of the Master Plan, and discusses the implementation of the first stages of the 1982-1992 Master Plan.

2. CHRONOLOGY OF TUFTS AND NEMC FACILITY MASTER PLAN DEVELOPMENT 1968-1982

2.1 OVERVIEW OF THE CAMPUS

An important step toward the development of the integrated Master Plan for New England Medical Center and the Tufts Health Sciences Schools in 1968 was the establishment of a campus-wide Planning Office in 1961. Under the direction of urban planner Hermann Field, this Planning Office was active in the development of many studies addressing a wide range of development issues.

Another major factor which catalyzed facility planning activities was the consolidation of clinical facilities in 1965, noted above, into the current New England Medical Center. The momentum of the merger, combined with the growing interest of the Tufts University Medical and Dental Schools in improving their facilities, led in 1965 to a major commitment by the several institutions to begin the development of a Joint Master Plan.

The Architects Collaborative (TAC) of Cambridge was selected in 1965 to lead the preparation of this Joint Master Plan. Using the proposals and studies developed by the Tufts-New England Medical Center Planning Office, The Architects Collaborative (TAC) developed a comprehensive plan for the replacement and development of the campus facilities.

Two events during the three-year period of the Master Plan's preparation were critical to the development process. The signing of a Cooperation Agreement on January 17, 1966, between the Boston Redevelopment Authority (BRA) and the Tufts-New England Medical Center represented an event of singular importance in defining our boundaries for growth and development. This Agreement, and the Supplement to it (dated December 20, 1968; see Appendix 2), provided for the acquisition, relocation, site clearance by the Boston Redevelopment Authority of certain designated parcels of land within the South Cove Urban Renewal Area and the sale of such parcels to Tufts-New England Medical Center for development. Another key element in our planning process occurred in 1967 when approval was granted by the Public Improvement Commission for the air rights over Washington Street.

The general planning assumptions which guided Master Plan development during this period (1965-1968) were as follows:

- The plan should address facility replacement and modernization in a comprehensive way, providing a phased-in process of renewal.
- The boundaries of the campus were Tremont, Stuart/Kneeland, Tyler, and Oak Streets.
- Clear pedestrian routes through the campus, as well as open spaces for public areas would be an essential element in our planning.
- Financially feasible commercial space would be developed on the lower levels of new buildings.
- Adequate arrangements for parking would be identified.

The chronology of events which followed the completion of the 1968 Joint Master Plan are summarized below.

Chronology

1968 Completion of Master Plan by TAC for Tufts University and New England Medical Center. The proposed development plan included the following phases and stages:

Stage I: NEMC 1A Building
(now called Proger)

Tufts' Dental Health Science Building

Tufts' Health Sciences Education Building - Part I

~~Student Housing~~ Development on Posner Lot

NEMC's 1B Building

Tower Addition

NEMC's 1C Building

Stage II: Tufts' Education Building - Part II

Student Housing Development (continued)

NEMC's Stage II Building and Tower

The program for each of the hospital buildings was planned to have patient care areas located on four levels. The first and second levels were to have ambulatory care facilities, diagnostic radiology, and operating suites. The third and fourth levels would contain inpatient beds. The plan was for

the four patient floors to be constructed over commercial space, cinemas, restaurants, and pedestrian areas located at street level. Underground parking and service access would also be included in the development (see attached Exhibit 2.1).

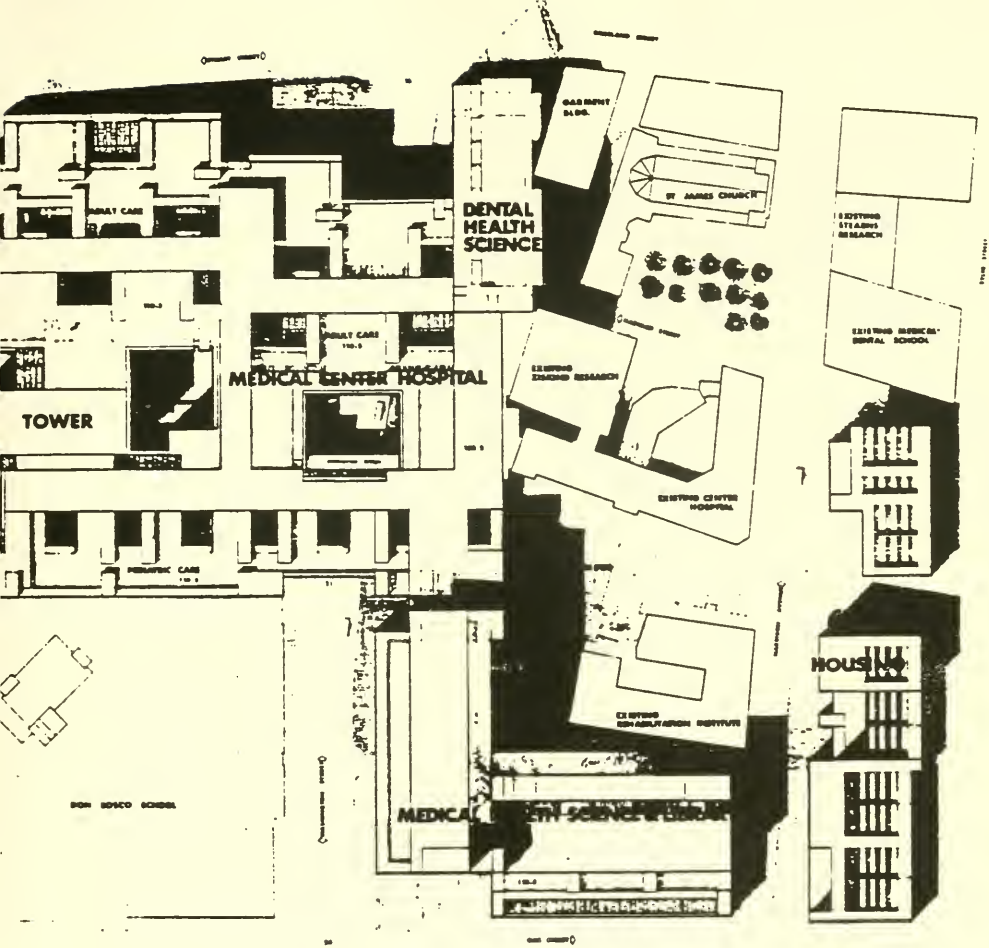
The program for the University was designed to address the serious space needs in terms of both educational facilities and library space. A new facility (HSEB Parts I and II) would be designed to house an expanded and modern library facility for use by the Health Sciences Schools as well as the New England Medical Center. This new facility would also house the educational spaces for use by both Health Sciences Schools (Medical and Dental). The new Dental Health Sciences Building would provide expanded and modernized facilities for laboratory and technical education of dental students including patient care clinics with renovated facilities for faculty and staff services. All of the current activities and responsibilities of the Dental School would be consolidated under one roof with the required technical resources to support both educational and patient care activities.

The decision was made by Tufts University and New England Medical Center in 1968 to proceed with the initial phases of the Master Plan: the hospital's 1A Building (Proger) and the Tufts Dental Health Science Building.

1968 Beginning of construction of the hospital's 1A Building (lower level for Radiotherapy).

1969 Purchase of South Cove Building by Tufts University for expansion of research, teaching and administrative space.

1970 Beginning of construction of Tufts Dental Building. Revision of 1968 Master Plan to change the location of the first Health



THE ARCHITECTS COLLABORATIVE

EXHIBIT 2.1 1968 Master Plan

Sciences Education Building (Part I) from the Oak Street area to the current site adjacent to the Medical School Buildings. The major reasons for this change, as outlined in the planning report published in 1970, were the convenience of the site to other educational and hospital buildings, and the anticipated problems if a new education building were built as far down Harrison Avenue as originally planned.

1971 Beginning of construction of Tremont Street garage, completed in 1972. This project represented the first major step in addressing the serious parking problems in the area. The hopes of planners in the early 1960's, that public transportation would be improved and would eliminate the need for increased parking, did not materialize adequately. The need for the 950 parking spaces built in the new garage on Tremont Street had been established in the 1968 Master Plan.

1973 Opening of NEMC 1A (Proger) Building and Tufts Dental Health Sciences Building, the first phases of the 1968 Master Plan.

1974 Revised version of the 1968 Master Plan submitted by Tufts and the New England Medical Center to the BRA. The revised plan included four phases:

	Proposed Time Frame
(1) Construct Proger, Dental Health Sciences Buildings, and Tremont St. Garage.	1968-1972
(2) Construct 1B Building (New Floating), renovate Biewend Building, convert Old Floating to research facility, develop surface parking and landscaping along Washington Street.	1973-1978
(3) Construct Learning Resources Building on Posner Lot, Administrative Building on St. James Church lot, Parking garage between Nassau and Oak Streets, develop park/concourse on site of present 37 and 49 Bennet Street buildings. Optional development of Parcel P-7 (bordering Stuart Street).	1979-1981
(4) Build 1C Building (hospital), expand 1B Building, build research facilities above Nassau/Oak garage, expand Dental Health Sciences Building vertically.	1982-1987

1974 Submission of Determination of Need Application for NEMC's 1B Building (New Floating Hospital) to the Department of Public Health. The program for the building involved a change in the 1968 plan for the 1B Building (see discussion of this change in Section 2.2). The application also included the Shuffle Space plan (reuse of space vacated when 1B opened) and renovations of the Biewend Building for office use. A long review process ensued on the application, involving many different planning

agencies at the local, regional, and state levels. Negotiations continued until March, 1976, when the Massachusetts Public Health Council denied the Application. NEMC then won its appeal of the denial, enabling the application to be brought back before the Public Health Council. The project was approved without the shuffle space project and with a reduction in dollars for the Biewend renovation in November, 1977.

1974 The 1974 clinical facilities revision of the Master Plan also responded to the growing interest in redeveloping the theater district and incorporated plans for the continued use of the Music Hall (now the Metropolitan Center) and the Wilbur Theater. The original 1968 Master Plan had envisioned the demolition of these buildings to reuse the land for new hospital buildings. With this revision in the Master Plan, a sizeable part of land designated for our new development was eliminated.

1977 The Flansburgh Study of library needs and programmatic alternatives (see further discussion in Section 2.3 below) was completed by Tufts.

1977 Planning for a new School of Veterinary Medicine began.

1978 A program for the proposed Health Sciences Education Building was completed for Tufts by the architectural and planning firm of Hoskins, Scott, and Taylor (see detailed description in Section 2.3 of the chronology below).

1978 NEMC submitted a revision of its Clinical Facilities Master Plan to the BRA. NEMC's update included revisions in the plan for 1B Building (New Floating Hospital) and 1C Building, to incorporate elements of the Stage II program originally proposed in the 1968 Master Plan.

1978 Discussion with BRA and U.S.D.A about feasibility of development of Nutrition Research Center. The U.S. Department of Agriculture was designated as developer when project approved.

1979 New Veterinary School opened with entrance of first class.

1980 Tufts University developed a Facilities Master Plan update. Tufts' update included a new plan for the Posner Lot area, HSEB, Dental Building expansion, and the development of a new research facility on the "Infill" lot between the existing M&V complex.

1981 T-NEMC leased 15 and 35 Kneeland Street. NEMC filed Determination of Need Applications for Biewend Ambulatory Care Center and Shuffle Space Projects (see description of these projects in Section 2.2). Revisions to these two components of the Clinical Facilities Master Plan were made.

1982 Joint review of long-term research needs (see Appendix 3).

1982 Tufts receives Federal funding award for construction of Health Sciences Education Building.

1982 NEMC receives Determination of Need approval from the Massachusetts Department of Public Health for development of the Biewend Ambulatory Care Center.

The two sections below provide a more detailed discussion of the plans for clinical and educational facilities development.

2.2 NEMC: CLINICAL FACILITIES REPLACEMENT PLAN

Since 1965, with the merger of the Boston Dispensary, the Boston Floating Hospital, and the New England Center Hospital, the New England Medical Center has directed its planning efforts toward a phased renovation and replacement program to provide modern facilities for its existing programs. Table One displays this phased program as first planned in 1968, and as revised in 1974, 1978, and 1981. The principal revisions are as follows:

- The urgency of facility replacement has forced program elements originally contained in the later phases of the Master Plan to be included in earlier phases. As shown in Table One, the 1B Project (New Floating Hospital) was revised three times during the long period between the original 1B program in 1968 and the 1B Building as constructed in 1979-1982. The major change in the program was the decision to include in 1B several adult components of the Master Plan, such as the Adult Operating Rooms, Radiology, and Cardiac Care Unit. With these changes in 1B, the 1978 Master Plan consolidated elements of the originally proposed Stage II plan into Stage I. This change added several program elements to the 1C program.

- The decision was made in 1980, and incorporated into the Master Plan in early 1981, that adult ambulatory care programs should be consolidated in a renovated Biewend Ambulatory Care Center, instead of constructing space for these services on the lower floors of several new buildings.

- To determine the components of the Shuffle Space Project (reallocation of space vacated when 1B opened) and 1C Project, NEMC did a detailed evaluation of every existing hospital building from a mechanical systems and building point of view. This analysis reconfirmed previous analyses and documented the

difficulty involved in converting existing buildings for alternative uses, including clinical, administrative, and research. The major purpose of this building evaluation project was to ensure that each building was appropriately considered for reuse. Appendix 4 includes this complete analysis.

The second element of planning was a detailed analysis in 1981 of the Pratt and Farnsworth Buildings. These buildings currently house the hospital's adult surgical inpatient beds. This analysis was undertaken in specific detail due to the fact that replacement of the hospital's adult surgical beds represents the major element of the next phase of hospital facility planning, the 1C project. The purpose of this study was to determine whether or not the Pratt and Farnsworth Buildings could be renovated as part of the Shuffle Space Project as an alternative to new construction, and serve as a long-term solution for the hospital's surgical inpatient program. The results of the study, as included within Appendix 5, indicate that the Pratt and Farnsworth Buildings cannot serve as the hospital's long-term solution for modernization of its inpatient surgical beds. This finding stimulated the final baseline data gathering for the Shuffle Space planning effort, and the determination of the most logical site for the 1C project. Thus, the decision was made that the Shuffle Space project should include an intermediate strategy for improving the most serious facility problems within the Pratt and Farnsworth Buildings until the 1C project is complete.

- The Shuffle Space program, as updated in 1981, includes the following components:
  - renovation of Pratt and Farnsworth Buildings, to address a few of the most serious problems prior to the 1C construction;

TABLE ONE
New England Medical Center Master Plan Development 1968-1981

Functional Areas	1968 Stage I Phase A	B	C	Stage II
Adult Ambulatory Facilities++	*		*	*
Adult Medical Beds	*		*	
Adult Diagnostic X-Ray	*		*	*
Radiotherapy	*			
Pediatric Ambulatory Facilities		*		
Pediatric Beds		*		
Pediatric Operating Rooms		*		
Pediatric Diagnostic X-Ray		*		
Clinical Laboratories		*		
Adult Operating Rooms++				*
Adult Surgical Beds				*
Central Dietary				*
Central Emergency Room			*	

++ added to 1B plans in 1974

	1978		
Adult Ambulatory Facilities	*	*	*
Adult Medical Beds	*		*
Adult Diagnostic X-Ray	*		*
Radiotherapy	*		
Pediatric Ambulatory Facilities		*	
Pediatric Beds		*	
Pediatric Operating Rooms		*	
Pediatric Diagnostic X-Ray		*	
Clinical Laboratories		*	
Adult Operating Rooms		*	
Adult Surgical Beds			*
Central Dietary			*
Central Emergency Room			*

	1981 Stage I Phase A	B	Shuffle	Biewend	C	Stage II
Adult Ambulatory Facilities	*			*	*	
Adult Medical Beds	*	*			*	
Adult Diagnostic X-Ray	*	*	*		*	
Radiotherapy	*					
Pediatric Ambulatory Facilities		*				
Pediatric Beds		*	*			
Pediatric Operating Rooms		*				
Pediatric Diagnostic X-Ray		*				
Clinical Laboratories		*				
Adult Operating Rooms		*	*			
Adult Surgical Beds			*		*	
Central Dietary					*	
Central Emergency Room					*	

- relocation and replacement of critical diagnostic equipment, in order to consolidate and improve services;
- expansion of Intensive Care Unit (ICU) capacity to meet growing demands;
- renovation of old operating rooms for Ambulatory Surgery;
- expansion of Psychiatry beds from 10 to 25 beds.

- The revised plan for the 1C Building is discussed in Chapter Four of the Master Plan, which addresses the chronology of planned changes between 1982 and 1992.

The timetable for the Biewend ACC and Shuffle Space projects is outlined in Chapter Four in a series of block diagrams showing the impact of these projects on the campus in 1983, 1984, 1985, and 1992.

2.3 TUFTS: EDUCATIONAL AND RESEARCH FACILITIES DEVELOPMENT PLAN

Since the completion of the Dental Health Sciences Building in 1973, renovation and replacement of educational facilities and the Health Sciences Library has been a major goal for the University in terms of its downtown campus. As summarized in Appendix 6, educational facilities and, in particular, the Library have been viewed as inadequate by accrediting bodies since 1954. The library facilities had been judged to be inadequate in size and substandard in quality even before the increases in class sizes of the Medical and Dental Schools and the advent of the Veterinary School. Educational space has become increasingly incapable of meeting existing classroom needs for the Medical School alone. With the need for classroom spaces for three classes of Veterinary students, the facilities have been severely strained. Total enrollment has grown from 885 in 1968 to 1400 in 1982 with a projected enrollment of 1510 in 1985.

The development of the Health Sciences Education Building was begun in 1977 with the Flansburgh study on library needs and programmatic alternatives for upgrading the existing facility, and for accommodating the dissemination technology necessary for the competitive health sciences campus of the future (Appendix 7). The proposed focus on information management and dissemination was of critical importance to the University due to its considerable reliance on off-site or associated hospitals for its clinical teaching program. Development of a central, coordinated information transmittal system for use by the associated hospitals became an essential program element in a new library and educational facility.

As described in the Chronology above, the proposed location for this new educational building was revised in 1970 to the site adjacent to St. James Church. This site selection was given final approval in 1978. The program elements for the new Health Sciences Education Building were initially identified in 1978. This program included plans for a modern library and educational facilities including auditoria and small group classrooms. With the receipt of federal construction funds for this facility, plans were revised and expanded to include the development of a modern information storage and retrieval system, as well as educational modules for self-study by students and faculty. With this revised plan, the University will have developed the essential core of a modern library and study center capable of providing computerized educational programs, database storage and retrieval and information exchange systems with remote site transmission.

As the plans for the Veterinary School were developed, facilities to house faculty offices and research space became a critical issue. Adequate faculty office and work space on the Health Sciences campus had been a problem for some time. As the University responded to the federal directive for expanded research in the biomedical sciences, the need for increased laboratory spaces resulted in the acquisition of the buildings which represent the current Medical & Veterinary complex

(See Exhibit 2.2). As noted in accreditation reports for the years 1954 and 1963, departments were augmented to meet minimum standards for successfully delivering an acceptable educational program. As departments increased in size and the need for laboratory facilities for complex and technologically advanced scientific work became more acute, the existing facilities were pressed to the point of overcrowding. Originally designed as garment factories, the Medical & Veterinary complex of buildings did not easily accommodate the air-handling, waste disposal, and animal management needs routinely a part of modern medical research. Even before the development of the Veterinary School, faculty were pressed into insufficient spaces and animal storage had become a serious problem. At this time, it is necessary to store research animals at off-site locations, and problems of transport and management of research animals are becoming acute.

In 1980, program plans for the development of a new research facility in the "Infill" site were developed for Medical School and Veterinary School faculty. This site was to be the first phase of a long-range development process for meeting Veterinary School facilities needs. In addition to providing expansion space for the basic science departments (Medical and Veterinary faculty) in the "Infill" site, the Posner Lot was identified as a site for a small animal hospital and further research space for the clinical faculty working as part of the small animal hospital staff.

- A new facility for research and animal management will be built on the Posner Lot. This new structure will provide a centralized animal management and holding facility for the use of the Health Sciences campus and the New England Medical Center. This facility will also provide research space for clinical Veterinary School faculty. Additional space in this new facility will be provided for basic science department

research and service needs which are dependent on proximity or relationship with sophisticated animal storage and isolation facilities.

- The "Infill" site will be used as originally intended, to provide expansion space and modern laboratory facilities for basic science faculty serving both the Medical and Veterinary Schools. This new facility will be designed to provide increased warehousing and materials management space for the basic sciences, relieve crowding in laboratories and research spaces and provide an opportunity for grouping of multidisciplinary interests in compatible locations.

The timetable for these research and educational spaces development projects is outlined in Chapter Four below in a series of block diagrams showing the impact of these projects on the campus in 1985, and 1990.

2.4 TUFTS AND NEMC CAMPUS TODAY: SEPTEMBER 1982

The chronology of Master Planning actions that have taken place between 1968 and 1982 represents a gradual process of facility replacement and modernization. The comprehensive redevelopment plans conceived in 1968 continue to be the planning goal, although modified both in design and in the time frame for implementation.

Exhibit 2.2 presents the Tufts Health Sciences Schools and New England Medical Center campus as it exists today, in September, 1982. The site plan shows New England Medical Center at a critical point in its Clinical Facilities Replacement Program, with its new Floating Hospital Building recently open (containing Pediatric beds, Operating and

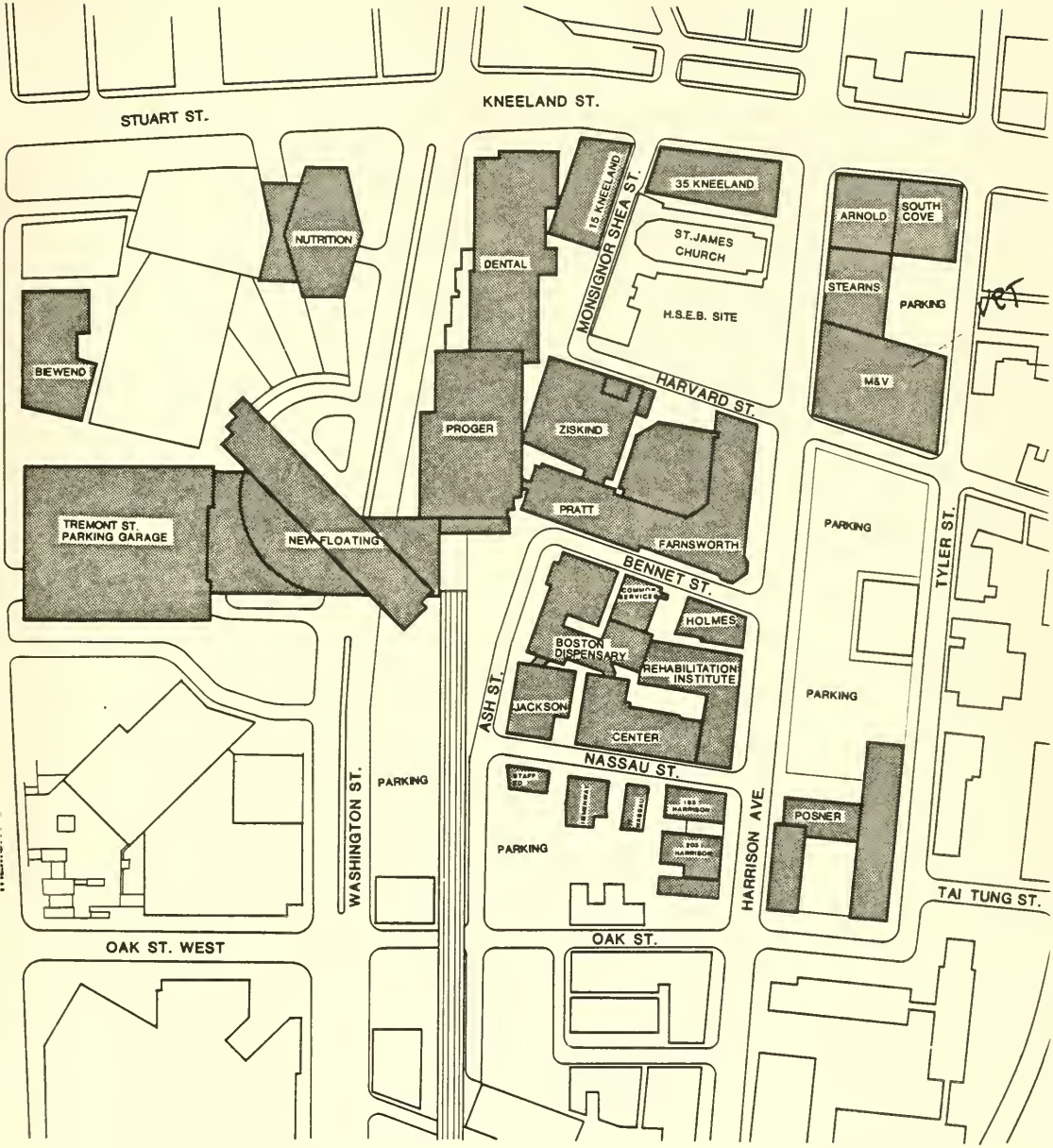


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EXHIBIT 2.2

Recovery Suites, Clinical Labs, and other services), but with many components of its facility upgrade plan not yet started. The Biewend ACC and Shuffle Space Projects, which will consolidate many services that are presently fragmented, outmoded, and overcrowded, are in the final planning stages. Other facility improvements are in the initial stage of planning.

The Tufts Health Sciences Schools are also at a critical point of development, with active planning underway for the construction of the Health Sciences Education Building (HSEB) on the St. James Lot. Planning is also underway for research expansion and for the reuse of space vacated when the new HSEB opens in 1985.

3. PROGRAM GOALS GUIDING FACILITIES MASTER PLAN DEVELOPMENT 1982-1992

3.1 CONTINUATION OF PRESENT MISSIONS

Provide tertiary level patient care services, excellence in research and a leadership role in service and education.

- Develop and implement innovative programs in health services delivery and organization.
- Continue the development of the Health Sciences Schools in the "One Medicine" concept so that all components of the downtown University campus are resources for each other.
- Continue with existing research development and reorganization efforts to ensure competitiveness for Federal funds and contribution to national priorities in Medicine.
- Develop information management programs and education techniques for innovative and advanced educational programs.
- Continue to lead in the development of advanced diagnostic and treatment procedures, utilizing the newest technology.

Maintenance of our role as a major academic health center requires a commitment to develop new and innovative programs in research, education, and service, as well as to review and reorganize current programs. As part of this Facilities Master Plan, such a review of current activities has begun and the plans presented below reflect our goals for coordinating programs and services where possible. Our first

priority is to renovate and replace facilities and equipment to accommodate advances and new priorities for research, education, and service delivery. Our second priority is to take advantage of new opportunities and national priorities in the development of future program and institutional goals.

3.2 DEVELOP PHASED PLANNING FOR FACILITY REPLACEMENT, RENOVATION AND MODERNIZATION IN ORDER TO CONTINUE PRESENT MISSIONS

- Continue our program for phased clinical facilities replacement to allow for the construction of modern medical care facilities that can support the advanced equipment and services necessary for tertiary care now and in the future. Many clinical programs are currently housed in physical facilities which are cramped, old, and unsuited to modern clinical medicine. Patient care areas must be renovated to reduce crowding and to provide a more attractive and efficient environment for patient care.

- Continue the development of a comprehensive program for an innovative and modern educational center, which will provide shared educational resources, as well as a modern information management center for the campus as a whole, and for our associated campuses and hospitals. Educational facilities have been documented as being severely deficient for over a decade.

- Modernize and renovate existing research space. Most of the research quarters on the campus are housed in buildings which were not designed to support these specialized and complex functions and are inadequate to support the tasks and activities being conducted as part of a modern research effort. Due to limitations in existing space, much research activity is

conducted with severe deficits in space. Research animals are housed off-campus, exposing them to risks of contamination in transport, and staff are squeezed into facilities which were meant for fewer people. Assurance of adequate work space for existing personnel and programs is a priority for research facility development.

- Develop new research opportunities made possible by such recent events as the development of the Federally-sponsored Human Nutrition Research Center on Aging and the appointment of leadership with expertise and interest in cardiovascular research.

Facility replacement and renovation remains a critical element in the ability of the Health Sciences Schools and New England Medical Center to continue with their present missions. In addition, the present level of health costs mandates the development of efficient and effective health care delivery facilities.

The pressing need to replace out-moded facilities and to create modern, efficient areas for patient care, teaching, and research has been the major thrust behind the steps that have been taken to date to implement our Master Plan. Considerable time and effort has been devoted to the task of developing a responsible, workable, and financially feasible plan to address the major facilities problems of New England Medical Center and Tufts University. The steps taken represent decisions made after long and fruitful discussion among groups both inside and outside NEMC and Tufts.

3.3 NEW DIRECTIONS IN RESEARCH AND EDUCATION

- Facilitate the efficient and effective operation of research programs through the development of a new administrative structure. This joint

center will serve as the focus for all research administration activities.

- As noted above, develop several major new areas of research which capitalize on the expertise in the Human Nutrition Research Center on Aging and in cancer and cardiovascular research. These three areas represent major national priorities and reflect unique opportunities for research excellence.

- Reorganize the clinical research base in line with refocused priorities and consistent with the tertiary care environment.

- Develop multidisciplinary research programs, consistent with national health needs, which focus the common interests of faculty in different departments. Such areas include nutrition, cardiovascular disease, cancer, neurosciences, and intestinal infection.

- Develop a modern information management and transmittal system to connect all teaching sites and associated campuses for educational and informational exchange purposes. This system would allow the design of curriculum materials and their transmission for teaching purposes to faculty and students at remote sites. Such a system could serve as a model program for educational development. Information management programs would also lead to improved library services and the ability to create interactive databases around clinical problems and/or research data.

There are many factors that make us optimistic about the future of research at Tufts and New England Medical Center. We are fortunate in having the opportunity to capitalize on a unique combination of resources for the development of programs in clinical nutrition, cancer, and cardiovascular research. It is rare that a center like the Human Nutrition Research Center on Aging is developed and it, together

with our strengths in cardiovascular research, provides complementary expertise for studies in clinical nutrition and prevention of disease. The combined force of research on aging and nutrition along with clinical nutrition research could extend the knowledge base in this area immeasurably within a very short time. The relationship of nutrition to cancer, and cardiovascular disease has been known for some time. An opportunity to develop companion research programs in these areas of major concern to the country happens rarely. Developing these programs is a major goal for our campus. Patient education and prevention in these disease areas is also a focus of our new research efforts. Our information management systems will enable us to include these areas in our curriculum as well as serve as a resource for patient education programs.

Current research programs continue to exhibit strength. Major areas of focus include immunology with special emphasis on cancer and allergy, basic cell biology, including the new areas of recombinant DNA and hybridoma research, and experimental and geographic medicine.

The Health Sciences Schools and the New England Medical Center have shown superior performance in terms of attracting and obtaining renewals for Federal funds for research projects. At a time of increasing Federal cutbacks, our faculty has shown continued improvement in their ability to generate both applications and awards for Fiscal Year 1981-82. The number of applications has increased by 16% while the number of awards has risen by 17%. Internal constraints of space and animal holding facilities currently limits our research capabilities and thus has an impact on our fiscal stability (Appendix 8). We must upgrade our facilities and increase our performance capacities if we are to remain effective and competitive as a major academic health center. The limitations of our facilities represents a major problem.

3.4 EXPANSION AND IMPROVEMENT OF COMMUNITY AND PUBLIC AREAS

As noted earlier, the boundaries of the Tufts University and New England Medical Center Master Plan area are in the heart of downtown Boston. The buildings of both institutions are mainly older structures; for the University the bulk of existing buildings are converted factory structures. There are few commercial structures within the Master Plan boundaries and there is limited public space with pedestrian access, landscaping or outdoor seating. Development of commercial space, pedestrian areas and public areas to serve both the needs of the New England Medical Center and Tufts University, as well as provide pleasant and comfortable public areas for the community surrounding the Master Plan area, has been a primary priority of the Master Planning process since its beginning. Major goals for this important area include:

- Establish an identity for the Tufts University and New England Medical Center campus within the larger neighborhood of Center City and the South Cove Area.

- Provide, at street level, activities that serve the general public as well as the Tufts University and NEMC community, in keeping with the urban location of the campus.

- Encourage physical improvement in the neighborhood surrounding the campus. Help to promote the neighborhood surrounding the campus. Help to promote the development of facilities that benefit the community as a whole.

To this end, specific proposals and recommendations for the development of pedestrian areas, plaza areas, roof terraces and commercial shops have been included as part of our Facilities Master Plan.

3.5 EXPANSION OF PARKING FACILITIES FOR PATIENTS, VISITORS, STAFF, FACULTY, AND STUDENTS

- Provide parking as contiguous to facilities as possible for patients, visitors, and those staff who are in and out during the day or night.

- Help assure a reasonable supply of safe, convenient public parking for those staff and students who require the use of an automobile. Help promote the use of other means of transportation such as public transit, bicycle, foot, or car pool.

At present, Tufts-New England Medical Center owns or leases 1,738 parking spaces in the following locations:

- Tremont Street Garage ✓
- Herald Street Garage (leased) ✓
- Posner Lot (site of proposed Research Building) ✓
- Oak Street Lot (site of proposed 1C Building) ✓
- Washington Street Lot (site of proposed NMR Building and Emergency Room driveway)
- Harvard Street Lot (site of proposed HSEB) ✓✓

Currently, 542 spaces are dedicated to patients and visitors and 95 are dedicated to staff who are in and out during the day. The remainder are used by regular staff.

With a population of over 8,000 faculty, students and staff working at the Health Sciences Schools and New England Medical Center, demand for parking far exceeds the supply of spaces for patients, visitors, and staff. One garage owned by the Tufts-New England Medical Center, the Eliot Street Garage (430 spaces) was torn down for the construction of the new State Transportation Building. Other public parking is disappearing as more new development takes place.

3.6 DEVELOPMENT OF HOUSING FACILITIES

- Provide adequate housing to meet the needs of the Health Science and Medical Campus, and the community's need for mixed income family housing.

- Work cooperatively with community groups to develop joint solutions to our mutual housing needs.

The 1968 Master Plan for Tufts and New England Medical Center designated the Posner Lot for student and faculty housing. As the space needs for educational, research, and clinical activities have become more critical over the years, we have been forced to look offsite for solutions to our housing requirements.

The original plan for the new Quincy School complex on Washington Street included space for Tufts' married student housing. There were many problems in trying to implement this plan, and Tufts finally withdrew from the project.

As discussed in Chapter 4 of this report, subsequent discussions have focused on joint housing developments in the neighborhood surrounding the Tufts and NEMC campus.

4. CHRONOLOGY OF PLANNED FACILITY CHANGES 1982-1992

4.1 1982 - 1985

New England Medical Center

- Completion of Biewend Ambulatory Care Center and Shuffle Space components of Clinical Facilities Replacement Plan.

- Beginning of construction of NMR and Tunnel Buildings.

The September 1982 Site Plan (Exhibit 2.2) shows the campus as it exists today. Block Diagrams (Exhibit 4.1) provide information on the use of each NEMC building by floor. Temporarily unassigned space, due to the recent occupancy of the New Floating Building, is also indicated on these diagrams.

The newest NEMC building, which was occupied in late August, 1982, is the New Floating Hospital Building. The Building, known as "1B" in the Facilities Master Plan, represents a major step in the replacement and modernization of clinical facilities at NEMC. Included in the Building are all new pediatric inpatient units to replace the beds in the Old

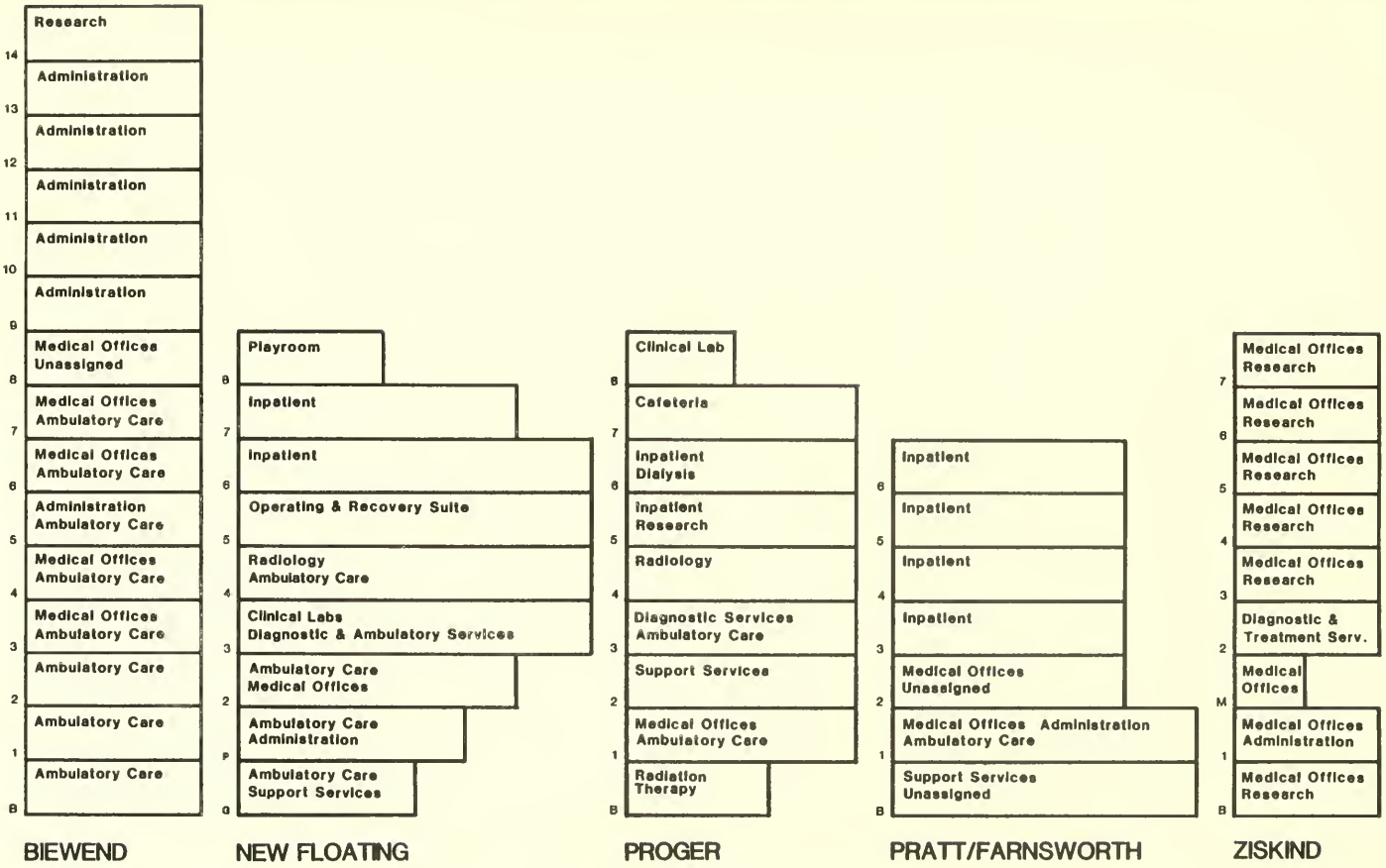
Floating Hospital, new facilities for clinical laboratory services, pediatric and adult diagnostic radiology, and pediatric and adult operating and recovery rooms.

The January 1983 Block Diagram (Exhibit 4.2) shows the changes resulting from the start of construction in November, 1982, for the new Biewend Ambulatory Care Center. New locations for many of the former Biewend tenants are shown in the Diagrams, including the Jackson (Old Floating Hospital), Boston Dispensary, and Center Buildings. Other Biewend tenants will move to appropriate off-site locations.

The need to consolidate adult ambulatory care services in one location, and to combine clinic and private patients, has been recognized for many years. Services are now scattered throughout numerous buildings with long distances for outpatients to travel to diagnostic and testing areas. The Massachusetts Department of Public Health confirmed the need for the new Biewend Ambulatory Care Center by approving the Medical Center's Determination of Need Application in April, 1982. Construction is expected to be completed by January,1984.

Other changes indicated in the January 1983 Block Diagrams are the first stages of the Shuffle Space Project. The goal of the Shuffle Space Project is to complete the consolidation of critical care services in the Proger Building and the New Floating Hospital. Reuse of space vacated by the move to the New Floating Hospital, as well as reorganization of some existing areas, will make it possible to consolidate in one location such services as Special Procedures Radiology, the Adult Cardiac Catheterization Lab and Cardiology beds, and the Surgical Intensive Care Unit beds, which will be moved to an area adjacent to the new Operating Room.

The components of Shuffle Space that will be completed by January 1983 include the relocation of the Surgical Intensive Care Unit and Adult



TUFTS UNIVERSITY AND NEW ENGLAND MEDICAL CENTER FACILITIES MASTER PLAN

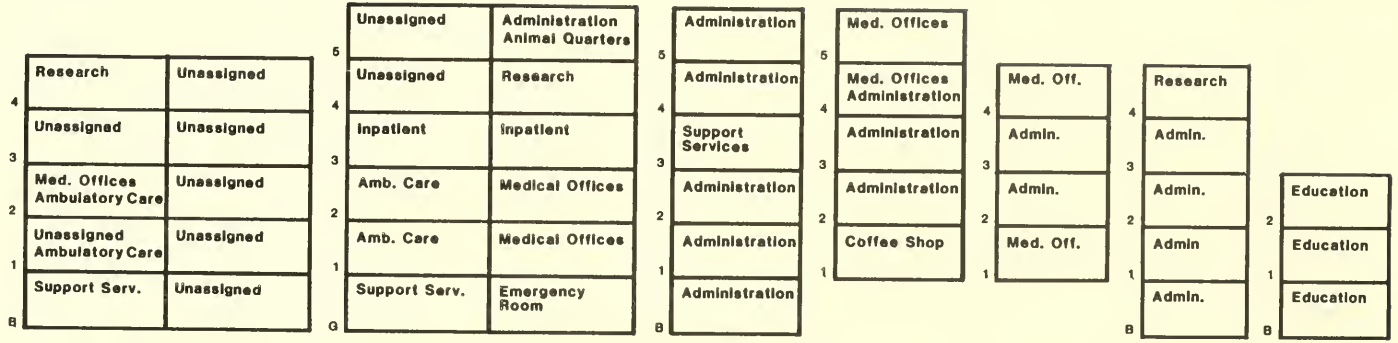
NEW ENGLAND MEDICAL CENTER BUILDINGS SEPTEMBER 1982

EXHIBIT 4.1

NOTE: UPPER CASE LETTERS INDICATE A CHANGE IN FUNCTION FROM PREVIOUSLY DATED BLOCK DIAGRAMS

KEY TO BLOCK DIAGRAMS

Administration	Administrative departments, such as personnel and communications, executive offices, public lobbies, finance and billing, conference rooms, educational support services
Unassigned	Not currently occupied, under construction, general storage



TUFTS UNIVERSITY AND NEW ENGLAND MEDICAL CENTER FACILITIES MASTER PLAN

NEW ENGLAND MEDICAL CENTER BUILDINGS SEPTEMBER 1982

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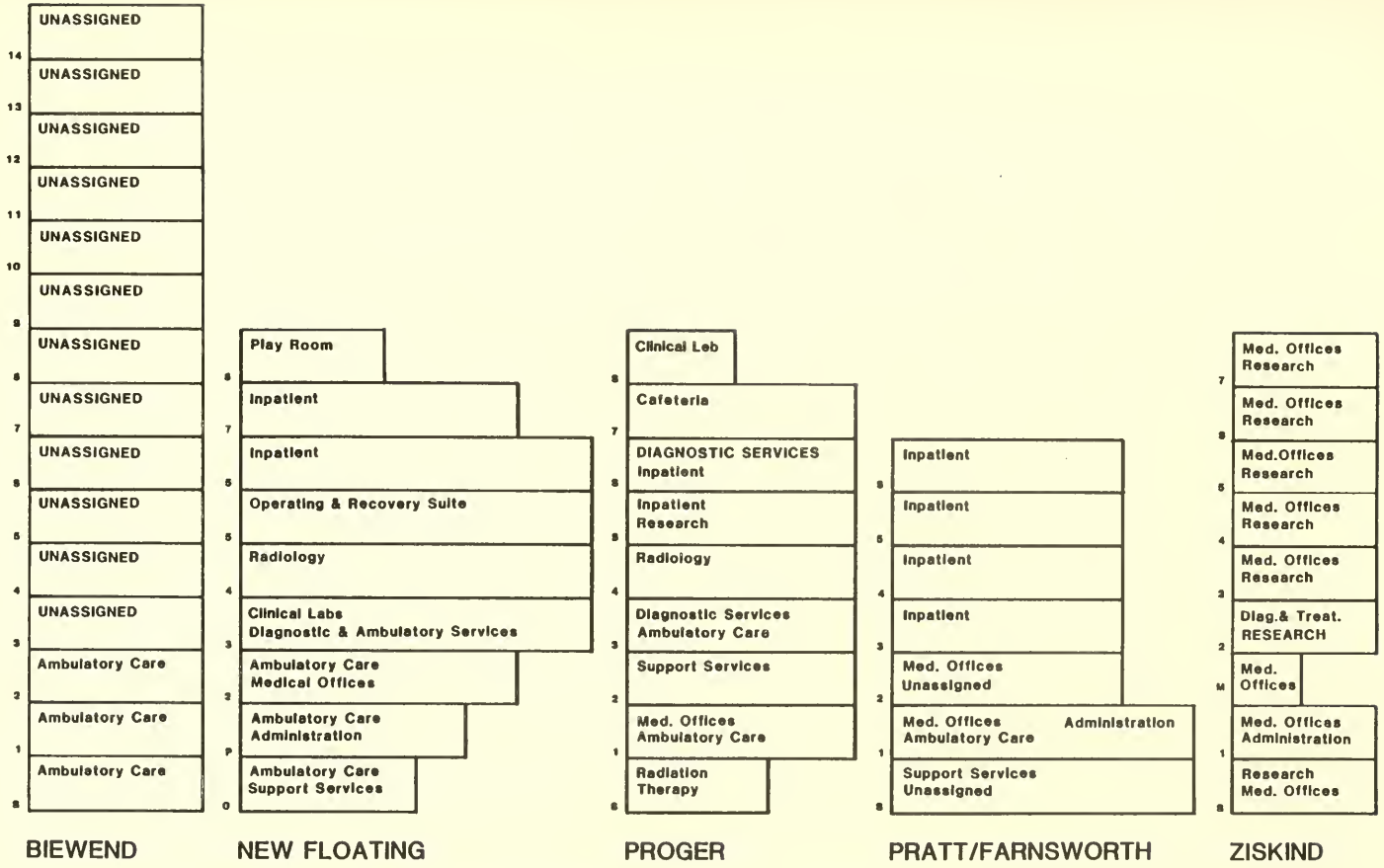

TUFTS UNIVERSITY AND NEW ENGLAND MEDICAL CENTER FACILITIES MASTER PLAN

NEW ENGLAND MEDICAL CENTER BUILDINGS

JANUARY 1983

EXHIBIT 4.2

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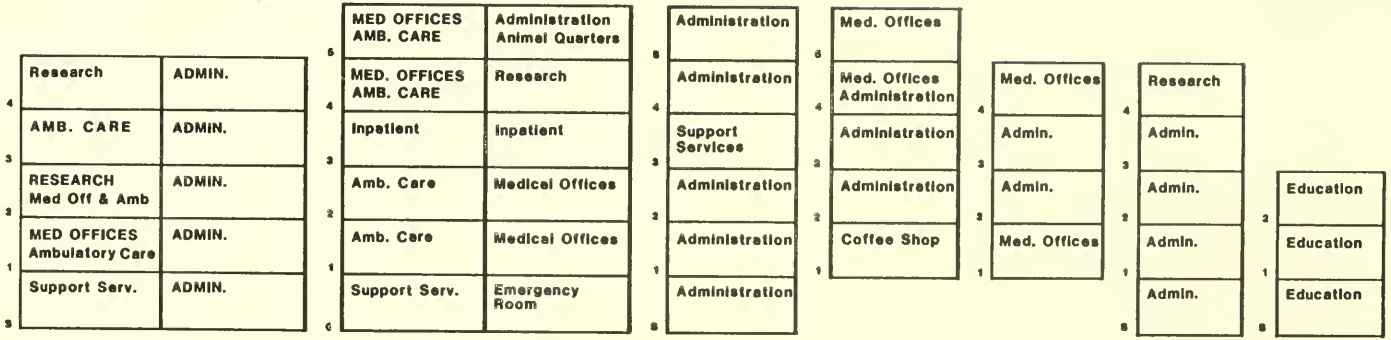


TUFTS UNIVERSITY AND NEW ENGLAND MEDICAL CENTER FACILITIES MASTER PLAN

NEW ENGLAND MEDICAL CENTER BUILDINGS

JANUARY 1983

EXHIBIT 4.2

NOTE: UPPER CASE LETTERS INDICATE A CHANGE IN FUNCTION FROM PREVIOUSLY DATED BLOCK DIAGRAMS

Cardiac Catheterization Laboratory, and the increase in Neonatal and Cardiac Care Unit beds. Other Shuffle Space components will be just beginning construction at that time.

The January 1984 Block Diagrams (Exhibit 4.3) show the new Biewend Ambulatory Care Center in operation, with 14 floors of outpatient services and physicians' offices. Those services occupying this building will include: Surgery, Dermatology, Urology, Gynecology, Neurology, Neuro-Ophthalmology, Psychiatry, Orthopedics, Medical Specialties, Pratt Diagnostic Clinic, General Medicine, Frances Stern Nutrition Center, Bay Cove Day Hospital, in addition to support services such as Radiology, EKG, Medical Records, and Social Services.

The completion of the Shuffle Space Project is also shown in the 1984 Block Diagrams. The components include:

- Relocation of Special Procedure Radiology
- Renovation of Old Operating Rooms for Ambulatory Surgery
- Renovation of Pratt and Farnsworth Nursing Units

Also indicated in the January 1984 Block Diagrams are the temporarily unassigned spaces which will be vacated when existing services move into the new Biewend Ambulatory Care Center. The program for these spaces will be known as Shuffle Space II.

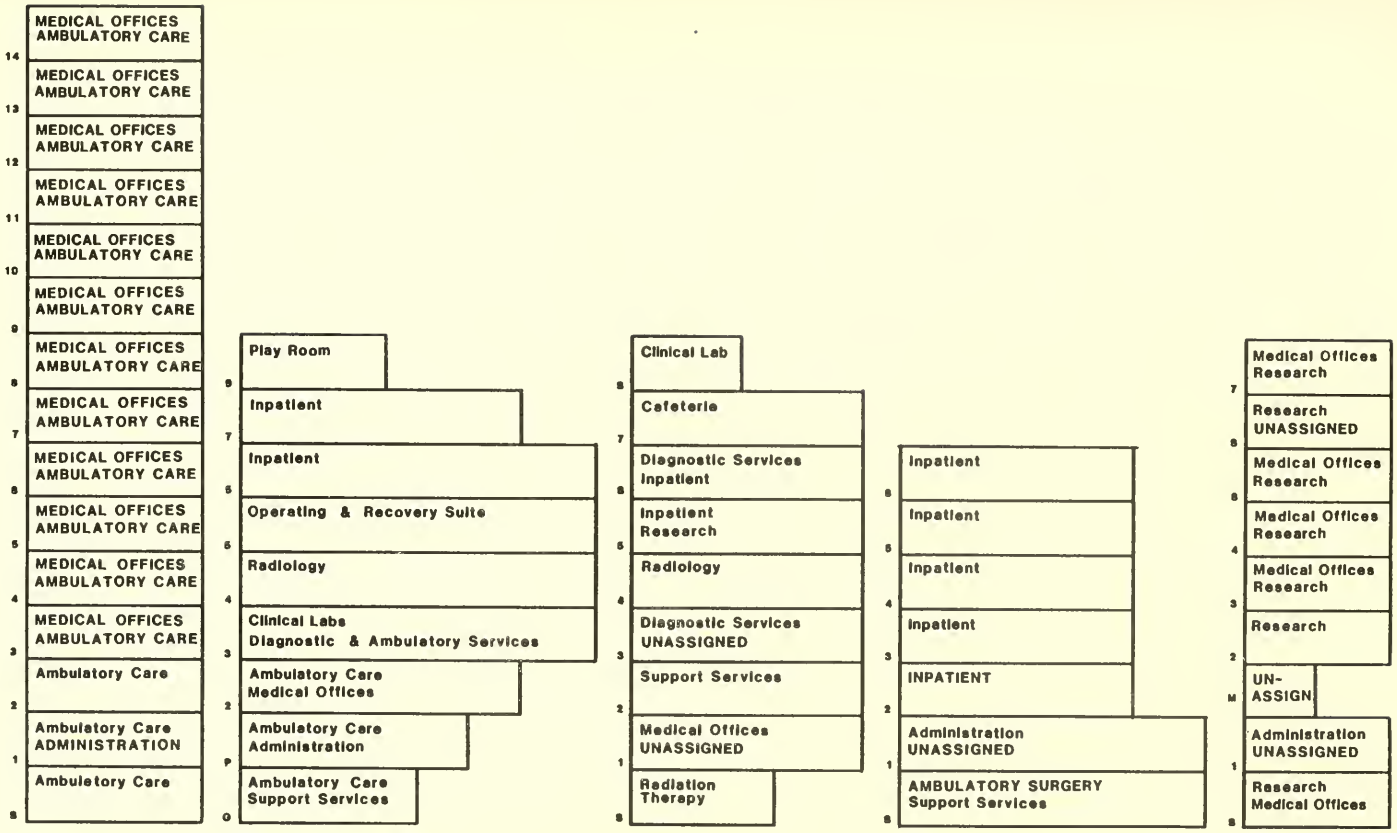
The January 1985 Site Plan (Exhibit 4.4) shows the reuse of the Shuffle Space II space, those areas which were vacated by services moving to the Biewend Ambulatory Care Center. The problems of crowded and decentralized diagnostic areas and inadequate patient support space will be addressed in this renovation project.

Also indicated in the January 1985 Site Plan is the start of construction of the new Nuclear Magnetic Resonance (NMR) facility and Tunnel Building. The NMR Building will be located south of the New

Floating Hospital and will provide space for NEMC's Nuclear Magnetic Resonance (NMR) equipment. NMR is a new diagnostic procedure that significantly improves diagnostic accuracy without radiation, and is a high priority for acquisition and installation in 1985. The equipment will be used for patient care, research, and teaching. The NMR works by applying various magnetic fields to the body and producing tomographic images of the hydrogen atoms in water and other molecules in the body. No x-rays, isotopes or other sources of tissue ionization are involved. Special structural requirements mandate that the NMR facility must be a small, separate building, and it is planned to be located adjacent to patient care areas of the New Floating Hospital and Proger Building.

The Tunnel Building will be located in the underground area between the Human Nutrition Center and the New Floating Hospital Building. It will provide space for a direct tunnel connection between the Nutrition Center and the New Floating Hospital, as well as approximately 10,000 gross square feet of space that will enable NEMC to relocate its Computer Center and other support services. The present location of our Computer Center is leased space in the Cooper Building, which we are required (by the landlord) to vacate. Another important function of the Tunnel Building will be the provision of a plaza on the roof of the underground building, with sitting areas and trees for residents of the neighborhood, patients, visitors, and staff. The new plaza will enlarge the existing plaza near the New Floating Hospital, and will continue the plaza adjacent to the Metropolitan Center.

Changes in building and floor assignments resulting from the completion of these projects are shown in the Block Diagrams (Exhibit 4.5).



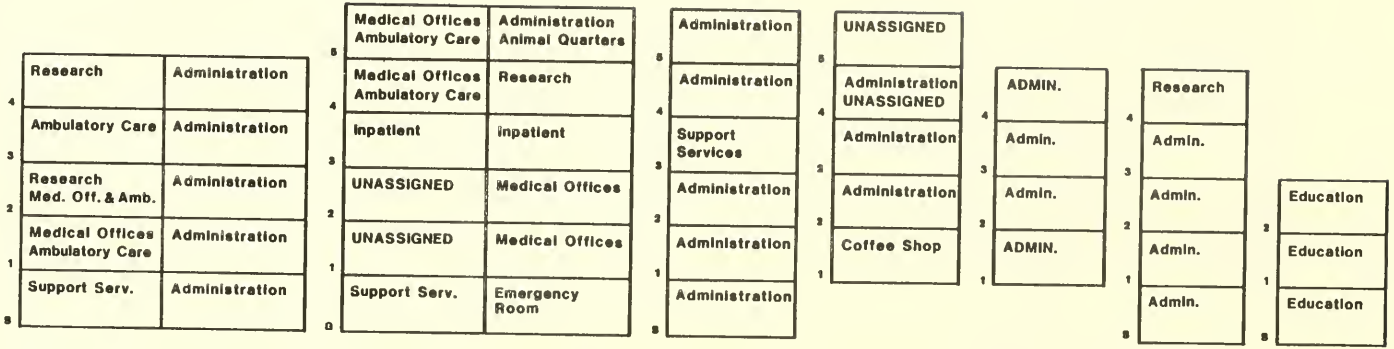
TUFTS UNIVERSITY AND NEW ENGLAND MEDICAL CENTER FACILITIES MASTER PLAN

NEW ENGLAND MEDICAL CENTER BUILDINGS

JANUARY 1984

EXHIBIT 4.3

NOTE: UPPER CASE LETTERS INDICATE A CHANGE IN FUNCTION FROM PREVIOUSLY DATED BLOCK DIAGRAMS



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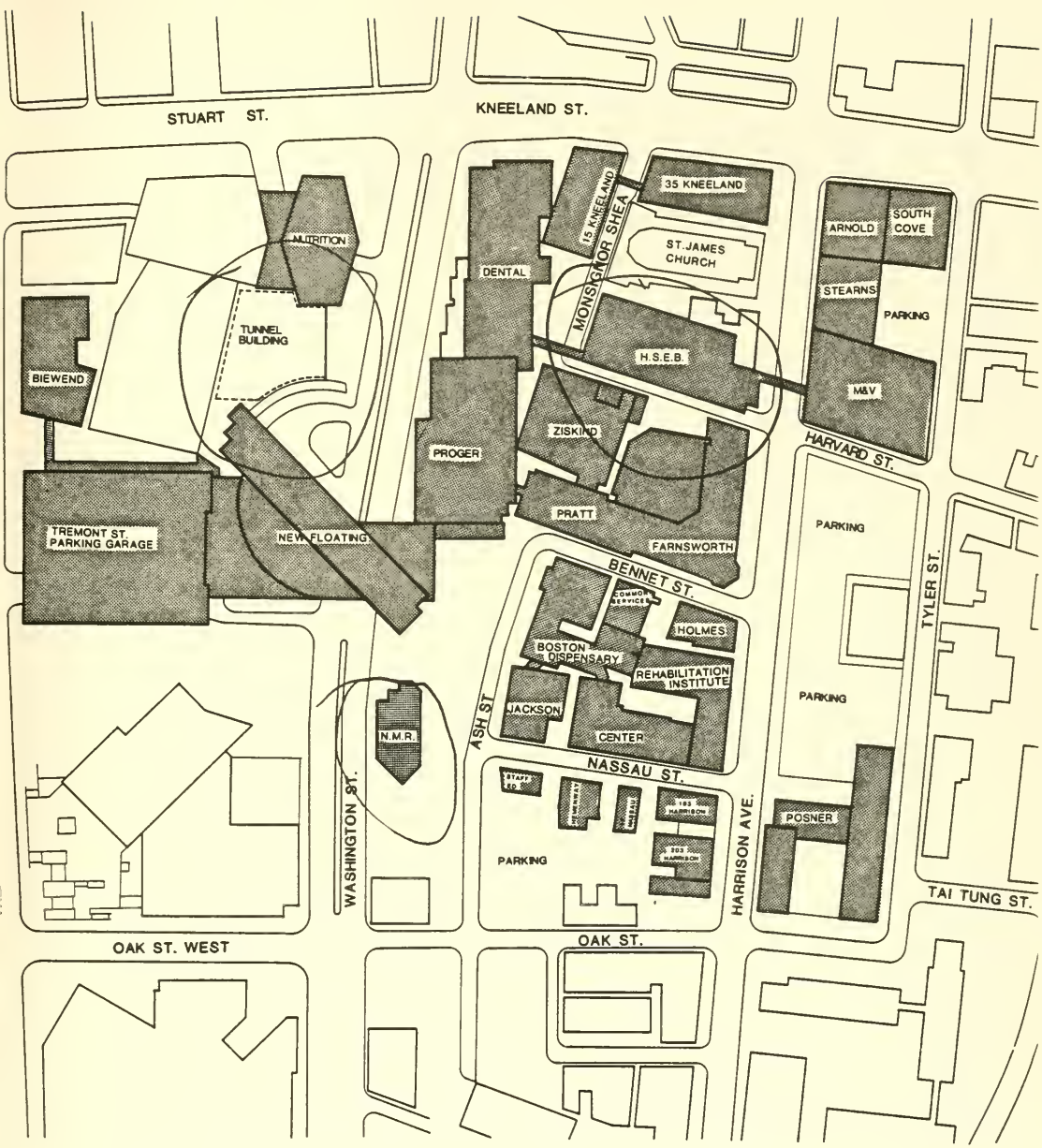
TUFTS UNIVERSITY AND NEW ENGLAND MEDICAL CENTER FACILITIES MASTER PLAN

NEW ENGLAND MEDICAL CENTER BUILDINGS

JANUARY 1984

EXHIBIT 4.3

NOTE: UPPER CASE LETTERS INDICATE A CHANGE IN FUNCTION FROM PREVIOUSLY DATED BLOCK DIAGRAMS



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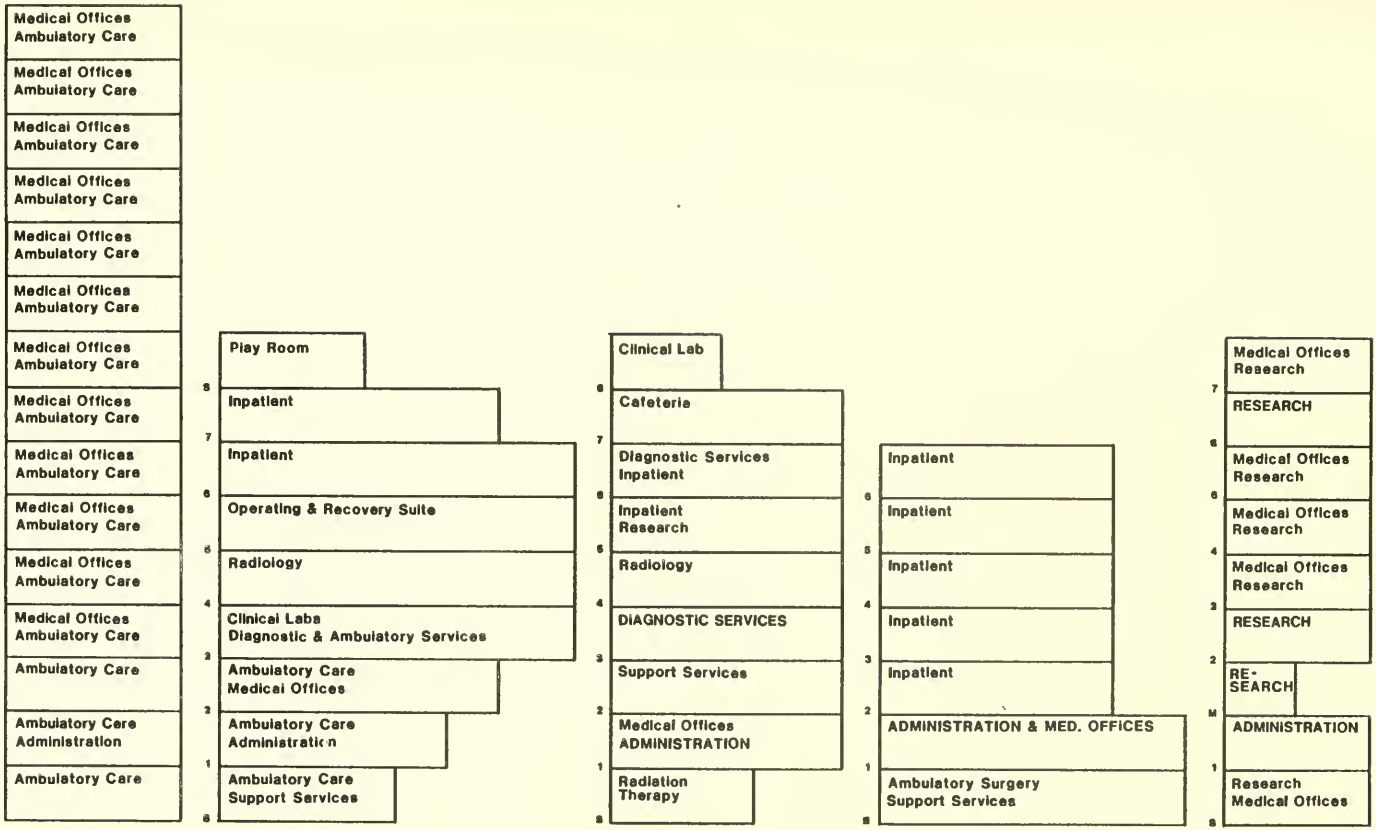

TUFTS UNIVERSITY AND NEW ENGLAND MEDICAL CENTER FACILITIES MASTER PLAN

NEW ENGLAND MEDICAL CENTER BUILDINGS

JANUARY 1985

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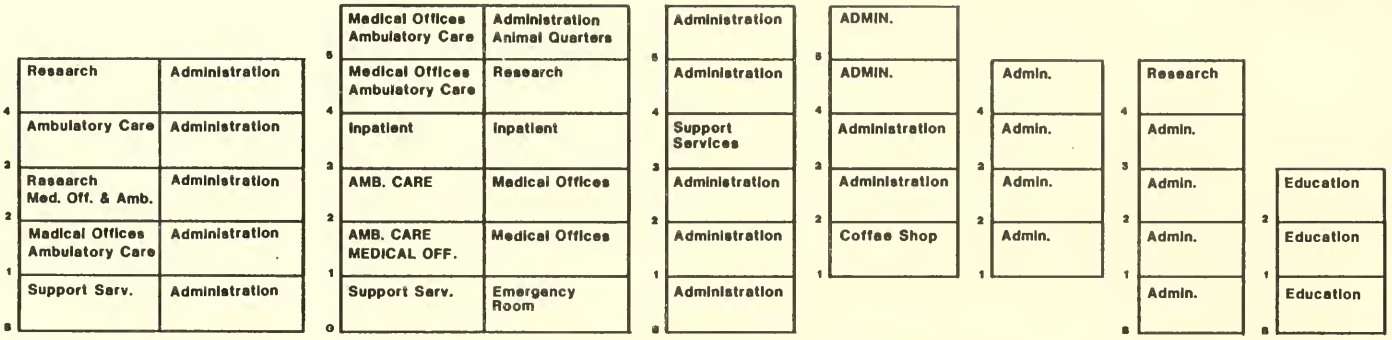


TUFTS UNIVERSITY AND NEW ENGLAND MEDICAL CENTER FACILITIES MASTER PLAN

NEW ENGLAND MEDICAL CENTER BUILDINGS JANUARY 1985

EXHIBIT 4.5

NOTE: UPPER CASE LETTERS INDICATE A CHANGE IN FUNCTION FROM PREVIOUSLY DATED BLOCK DIAGRAMS

Tufts University

- Health Sciences Education Building:

The September, 1982 Site Plan (Exhibit 2.2) clearly indicates the proposed site of the new HSEB. Block Diagrams (Exhibit 4.6) provide information on current building occupancy by floor. Temporarily vacant space due to the relocation of the Boston School of Occupational Therapy to the Medford Campus is also indicated on these diagrams.

Development plans are moving towards a construction start of March 1, 1983 for the Health Sciences Education Building with occupancy anticipated for September, 1985. As illustrated in Exhibit 4.7, the Health Sciences Education Building will contain the University's Health Sciences Library, information management center, microfilm and audio-visual services, document center, auditoria, classrooms, and Administrative offices.

The HSEB is proposed to be nine stories above ground, and it will contain 134,000 gsf. It is envisioned that the building will have bridge connections with the Dental Building and with the M&V Building at the fourth floor. The fourth floor is conceived as a concourse level or institutional "main street" linking the various University and NEMC buildings. These bridge connections will be designed to be as transparent as possible through the liberal use of glass.

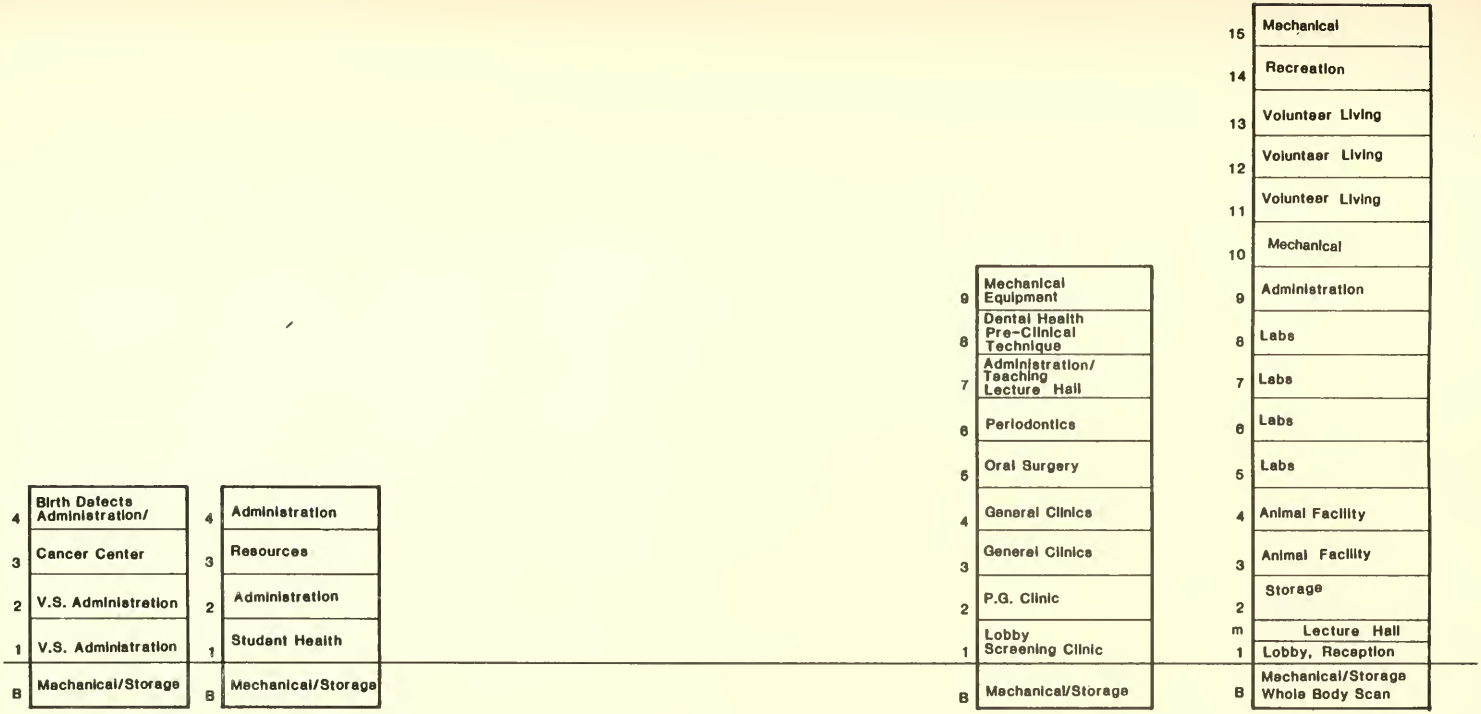
The HSEB has been specifically designed to address several decades of accreditation recommendations concerning our inadequate educational space and our outmoded library facilities. As part of this Building, educational spaces have been designed to provide both auditoria and small-group teaching facilities for the Medical School, the Veterinary School and the Graduate School. While site and financial limitations have somewhat constrained the potential number of classrooms, the Building will go a long way to resolving our educational space crisis

and allowing us to meet the varied and complex educational needs of the three schools using the Building. Wet laboratories will remain in the M&V complex and provision will be made to retain several of our current small group teaching rooms as well as an additional lecture hall at Posner to fully accommodate our program needs, Continuing Education needs and conference space requests.

As currently designed, the HSEB has the following space components: administrative space, library space, classroom/lecture rooms, an auditorium, and space for student support services such as registration/admissions, financial aid, continuing education, curriculum, student affairs, etc. At present, student support services are scattered in different floors and buildings across the Tufts campus. Locating student support services in the HSEB will enable health sciences students to have closer interactions with staff, faculty, and other students. It is anticipated that this space will be located in close proximity to the students and public to make these services more accessible.

The health sciences administrative space includes a central area which could be used to bring members of the public, community, Trustees, faculty/students, and other members together for social, business, and academic functions. This space will integrate the downtown center and provide a cohesive image and symbol to the public-at-large.

The Library design was developed to serve two purposes; to accommodate the growing needs of the constituent Health Sciences Schools and the New England Medical Center and to be organized so that it can meet the challenges of new technology. A recent report by the Association of American Medical Colleges stresses the need to develop the library as an information center, linking it to other libraries and to the center of activity within the institution. This concept was the guiding principle in planning for the Library. In deciding on the appropriate

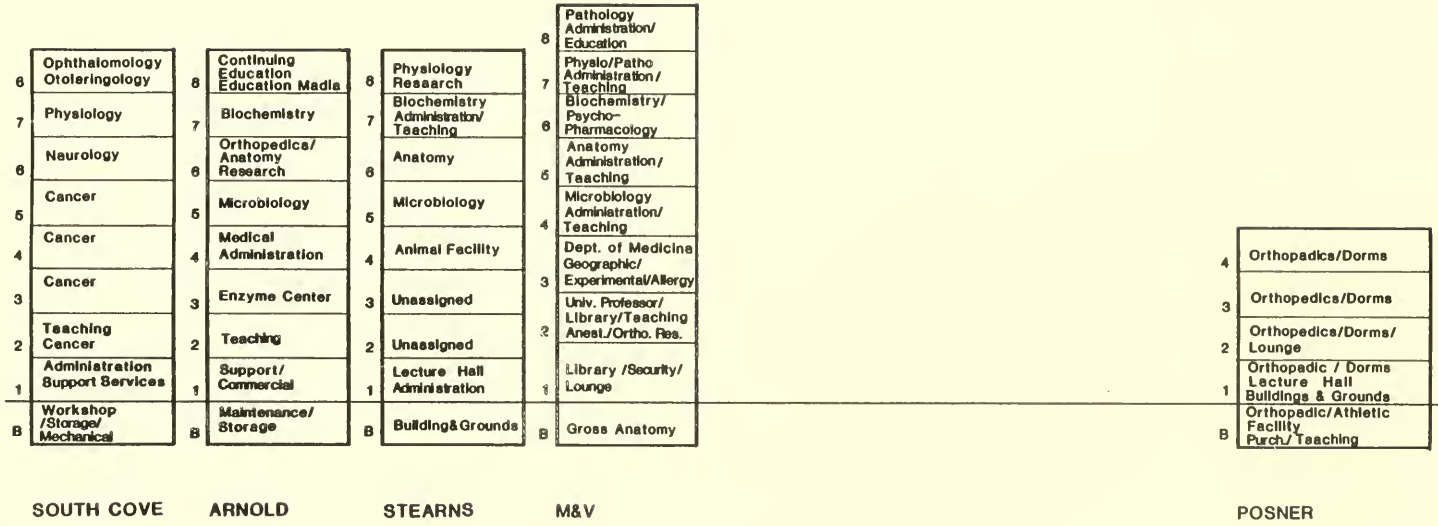


TUFTS UNIVERSITY AND NEW ENGLAND MEDICAL CENTER

FACILITIES MASTER PLAN

TUFTS UNIVERSITY BUILDINGS 1982

EXHIBIT 4.6

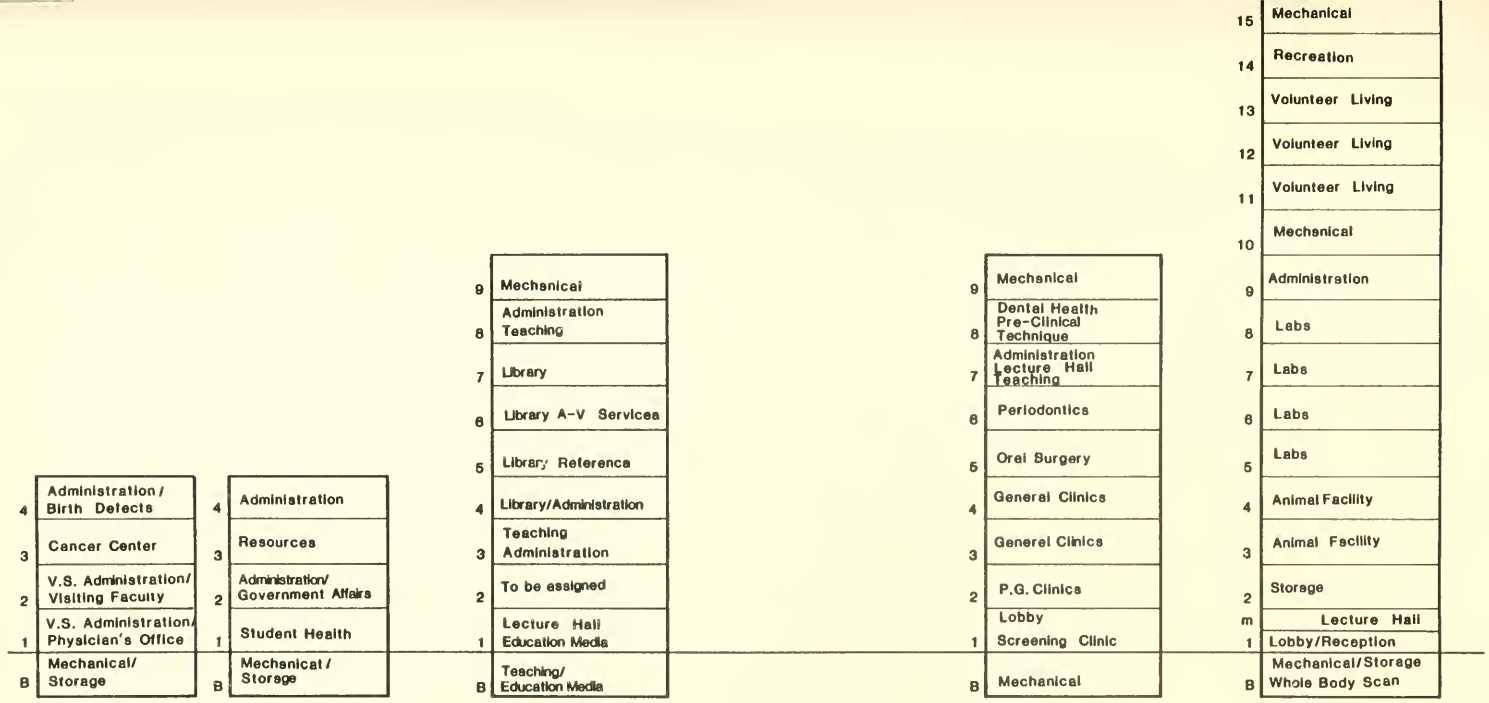


TUFTS UNIVERSITY AND NEW ENGLAND MEDICAL CENTER

FACILITIES MASTER PLAN

TUFTS UNIVERSITY BUILDINGS 1982

EXHIBIT 4.6

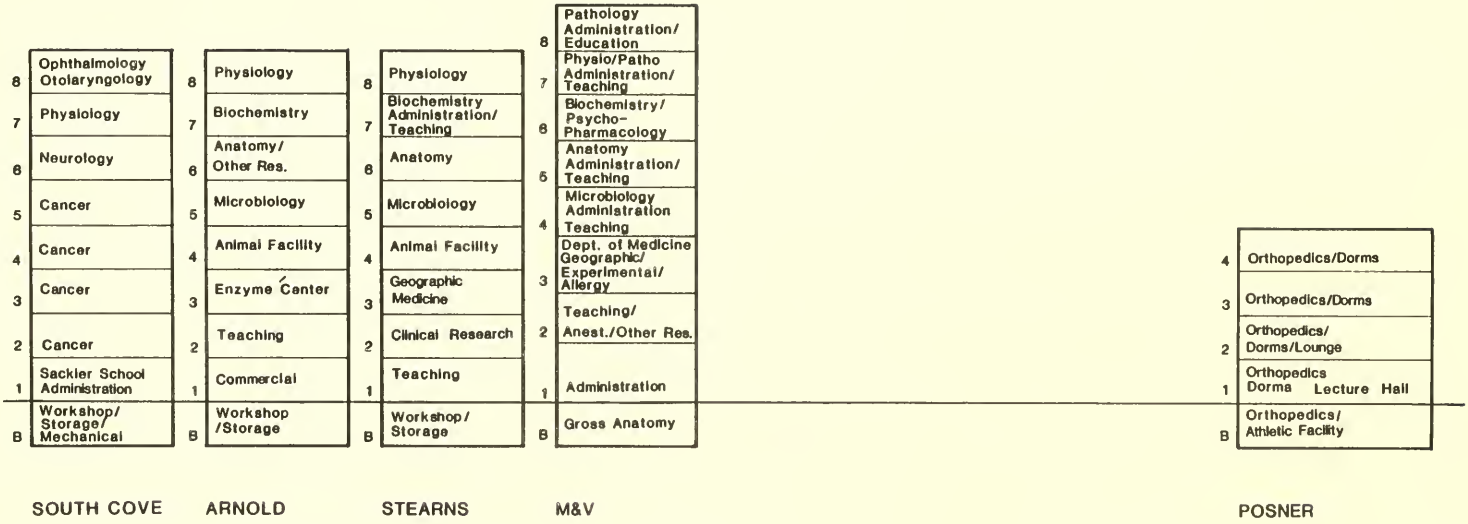


TUFTS UNIVERSITY AND NEW ENGLAND MEDICAL CENTER

FACILITIES MASTER PLAN

TUFTS UNIVERSITY BUILDINGS 1985

EXHIBIT 4.7



TUFTS UNIVERSITY AND NEW ENGLAND MEDICAL CENTER

FACILITIES MASTER PLAN

TUFTS UNIVERSITY BUILDINGS 1985

EXHIBIT 4.7

size and its functions, attention was paid not only to existing standards, but to anticipated future developments in information science.

The Library has a carefully planned program of phased automation which includes new and cost-effective information and communication systems, as well as an electronic Union Catalogue which will eventually extend bibliographic access to all holdings of the University and applicable remote sites. These services will be part of an integrated automation system incorporating acquisitions, cataloging, serial control, inventory control (circulation) and interlibrary loan.

One innovative feature of the planned automation is development of a system of Bibliographic Resource Modules. These computer-based user terminals will free the user from the restrictions of a single catalogue by allowing access to required information from many different locations within the Library. This will, of course, have obvious implications for traffic flow and design. In addition, the Bibliographic Resource Module will allow information in the Library to be organized as a unified collection, while effectively addressing the needs of special interest users by allowing the power of the computer to present the resources of the Library in different ways to different users.

Although the Library will draw heavily on new technologies, it must nevertheless be an environment for people. As such, it must remain flexible to adapt its space and services not just to current needs, but also to new needs and to the technologies required to meet those needs. User space is provided in a variety of configurations conducive to browsing, research and study. These range from personalized space such as studies and carrels, to traditional reading areas with tables and chairs. Their form and configuration will recognize the needs for personal concentration, relaxation, and group study.

In addition, the Library provides space for research planning where the user and the Librarian can develop appropriate search strategies. Ways of implementing these strategies may change considerably over time as new technologies are used to create banks of information accessible at a distance. For this reason, the Library also contains areas specifically designed to experiment with new modes of information access and retrieval.

- Boston School of Occupational Therapy

This School relocated to the Tufts Medford Campus several months ago, vacating 8,000 net square feet of space on the second and third floors of Stearns. This space has been designated for renovation into biomedical research space. Planning efforts have begun for the development of these floors. Recent expansion awards in geographic medicine have led to an acute need for contiguous space. Research facilities development is also part of the recruitment package for Chairmen in Pediatrics and Obstetrics/Gynecology.

Construction will begin in January, 1983, with occupancy planned for September, 1983. As noted in Exhibit 4.7, by 1985 these floors will be fully occupied.

Joint Facilities Projects

The major joint project that will be completed by 1985 is the renovation of the 15 and 35 Kneeland Street Buildings. Each of these buildings addresses a major goal of the Joint Facilities Master Plan.

The 15 Kneeland Street Building will provide much needed research space, with a special focus on multi-disciplinary projects. Some comparative data on research space capacity at NEMC, Tufts, and other

major medical centers is provided below in order to illustrate the deficiencies in research space on our campus.

HOSPITALS	RESEARCH SPACE (% of Total Space)
Beth Israel Hospital	8.5*
B.U.-University Hospital	14.7
Brigham & Women's Hospital	13.0
Children's Hospital	22.0
Mass General Hospital	14.4 **
New England Medical Center	8.4
MEDICAL SCHOOLS	
Boston University	49.7
Tufts University	36.4

*Does not include major hospital building program in progress, including new research building of 100,000 square feet.

**Does not include new research building at Mass General Hospital.

These comparative figures illustrate the problem that NEMC and Tufts Health Sciences Schools have had for many years: inadequate space in the context of competing needs for patient care space, educational areas, as well as research. As indicated in the figures above, and elsewhere in this Master Plan, present research space is totally inadequate for our needs. Grant proposals for worthy research cannot be submitted because no space is available for the projects. As noted above, several steps are being taken to address this very pressing need. As an initial effort, NEMC and the Tufts Health Sciences Schools have planned the renovation of 15 Kneeland Street for needed research space. Several engineering and feasibility studies have been done to assess the building's capabilities as a research facility, and it has

been determined that such a development is both feasible and essential. The research programs planned for 15 Kneeland Street include the following:

- Multidisciplinary Cardiovascular Research
- Organ Transplant Research
- Pediatric Research
- Neurosciences Research
- Clinical Nutrition Research

The renovation of 35 Kneeland Street will address two major goals of the Facilities Master Plan: (1) the need to replace administrative space lost by construction of NEMC's 1C replacement facility; and (2) the need for additional administrative space not adequately accommodated in the existing Tufts Health Sciences Schools' buildings. The 35 Kneeland Street Building will be renovated to house administrative areas from these buildings as well as those located on the site for the 1C Building, which is planned for other uses. The program is planned to be as follows:

Tufts: Administration
Business and Purchasing
Buildings and Grounds
Personnel
Security

NEMC: Finance and Billing
Development
Research Institute
Industrial Engineering

Public Relations and Communications
Staff Education
Information Services

(see Exhibit 4.8)

Active planning is underway for the development of these buildings, given the recent progress in the plans for the relocation of the garment industries in these and other Chinatown buildings to the South Boston Army Base.

4.2 1986 - 1992

New England Medical Center

During this period of 1986 to 1992, the final phases of New England Medical Center's Clinical Facilities Replacement Plan will be implemented, including:

- Completion of NMR and Tunnel Buildings,
- Construction of 1C Building, which will include a new Emergency Room (E.R.) and replacement of beds.

Occupancy of the new NMR and Tunnel Buildings is expected to occur in 1986.

The proposed 1C Building will contain the following services:

- The replacement of adult medical and surgical beds which are presently located in the Pratt-Farnsworth Buildings.

- The replacement and expansion of the emergency department which is presently located in the Rehabilitation Building on Harrison Avenue.

- The replacement and expansion of support services such as the main kitchen, pharmacy, employee facilities (lockers and toilets), housekeeping, linen and maintenance shops. All of these services are currently inefficiently scattered around in various buildings.

- Expansion of radiology which includes radiology special procedures suite, nuclear medicine and ultra sound.

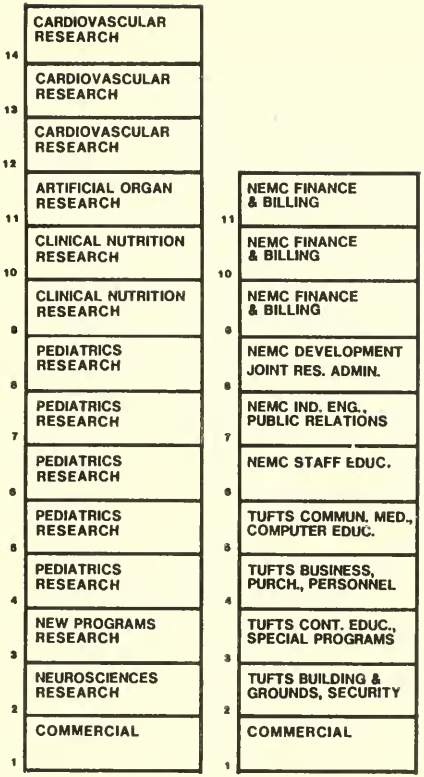
- A new centralized main entrance with the necessary support facilities for public areas.

- The replacement of surface parking areas lost to construction in a parking structure.

- The replacement of certain ambulatory clinics which are presently located in buildings which have to be demolished in order to implement the 1C Building.

The following are the major problems which will be addressed with the implementation of the 1C Building:

- The main thrust behind the 1C Building is the replacement of the functionally outmoded nursing units which are currently located in the Pratt-Farnsworth Buildings. Before the commitment was made to replace these beds, a special study was conducted to investigate whether the existing nursing units in the Pratt-Farnsworth Buildings could be upgraded. The outcome of this study gave conclusive evidence that the existing functional problems could not be solved, even with major renovations, due



15 KNEELAND 35 KNEELAND

TUFTS UNIVERSITY AND NEW ENGLAND MEDICAL CENTER FACILITIES MASTER PLAN

JANUARY 1985

NOTE: UPPER CASE LETTERS INDICATE A CHANGE IN FUNCTION FROM PREVIOUSLY DATED BLOCK DIAGRAMS

EXHIBIT 4.8

to the configuration and placement of the Buildings. A copy of this study is enclosed (Appendix 5).

- The emergency department is currently located in the Rehabilitation Building which is quite remote from the buildings which house the acute care services. The only connection between the emergency department and the acute care section of the Hospital is an underground tunnel which has many ramps and turns and gives the appearance of a utility tunnel rather than a major connection used for transportation of patients. The configuration and the size of the present emergency department is also obsolete by modern standards. Finally, the emergency department should be directly accessible from Washington Street, as well as from Harrison Avenue, which is a one-way street.

- The replacement of the main kitchen has been an objective for many years. The kitchen is functionally outmoded and its location in Farnsworth is very remote from the patient areas it serves.

- Centralized facilities for other support services are very scarce or non-existent at New England Medical Center. The housekeeping and linen services are presently located in the Dental Building, and the pharmacy is located in the Boston Dispensary Building which has to be demolished in order to implement the 1C Building. Therefore, all of these services will be centralized in the 1C Building.

- Diagnostic radiology services are currently located on the fourth floor of the 1B Building and the Proger Building. They include adult and pediatric radiology, radiology special procedures suite, nuclear medicine, and ultra sound. These services are presently occupying all the available space on the

fourth floor and the only future expansion, without decentralizing the department, will be on the fourth floor of the 1C Building.

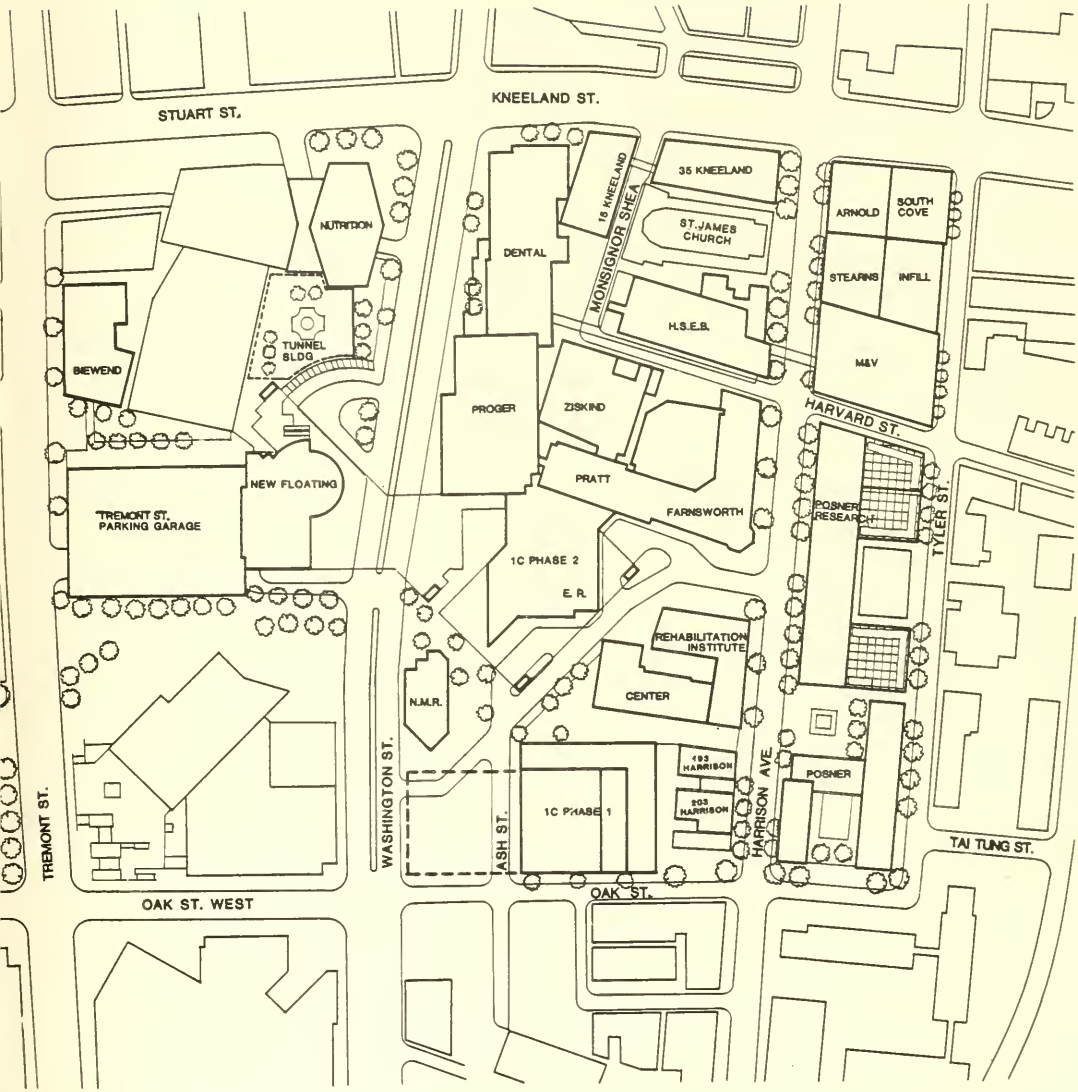
- A new, centrally-located main entrance is included in the proposed 1C Building. The proposed main entrance will be located at the intersection of the Proger Building (1A), the 1B Building and the proposed 1C Building which is the nucleus of the New England Medical Center. The control and orientation of visitors in one central main entrance is extremely important for an institution the size of New England Medical Center.

- In this joint master plan prepared by Tufts University and New England Medical Center, it is proposed that the existing surface parking area will be utilized for the construction of additional buildings and traffic circulation. The 1C Building, therefore, includes the consolidation of these surface parking areas into a parking structure to replace spaces that would otherwise be lost.

- The 1C Building includes ambulatory clinics which will be displaced by the demolition of buildings that are located on the 1C site.

Construction of 1C will have two phases. Phase I will begin in 1986 and is planned as the facility to relocate services now located where Phase II of 1C will be built. Phase I will also contain several floors of parking to replace parking spaces lost due to development on the campus.

An alternative footprint for Phase I of 1C is proposed (see Site Plan Alternate). Under this plan, the footprint would extend over Ash Street to Washington Street. This change would provide 54,760 additional gsf of space for 165 additional parking spaces (total of 5 floors; 1 floor underground, 4 above ground). We anticipate obtaining this land area and developing our plans for 1C Phase I based on this



TUFTS UNIVERSITY AND NEW ENGLAND MEDICAL CENTER
FACILITIES MASTER PLAN • CAMPUS PLAN 1992

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SITE PLAN ALTERNATE

expanded area. Feasibility is dependent on many factors, including acquisition of the land and discontinuance of the MBTA Orange Line. The expanded parking facilities would mean that the capacity of the proposed off-site parking facility could be reduced. If we do not proceed with this alternative plan, the original footprint is feasible as presented in Exhibit 4.11.

Phase II will contain all the remaining 1C elements listed above. The construction period is planned to be 1987 to 1989. With the completion of both phases, New England Medical Center will have completed the replacement and modernization of its clinical facilities (see Exhibit 4.9).

Tufts University

- Health Sciences Education Building Shuffle:

Occupancy of the Health Sciences Education Building in 1985, will vacate 18,788 nsf in Arnold (Arnold 4), Stearns (Stearns 1), and M&V (M&V 1&2). Remodeling construction of the vacated space will begin in September, 1985, with occupancy planned for June, 1986.

The remodeled areas will contain expanded animal facilities on Arnold 4. This space will be contiguous with current animal storage quarters on Stearns 4. Stearns 1 will be remodelled into seminar/conference rooms to be used in conjunction with the educational spaces in the HSEB. These new conference rooms represent partial provisions for additional classroom space noted in Section 4.1. The library will vacate space on both M&V 1 and 2. The space on M&V 1 will be renovated to house administrative functions for the Medical School and Veterinary School not assigned to the HSEB. M&V 2 will be renovated to serve as research space.

- Posner Lot Research Building:

Construction of the Posner Lot Research Building will begin in the Fall of 1985, with occupancy anticipated in the Spring of 1987. The building will be located on the site of the current Posner parking lot and will extend from Harvard Street to Posner Hall and from Harrison Avenue to Tyler Street.

The Building will include 12 stories along Harrison Avenue, and will step down to the height of the existing row houses on Tyler Street. The Tyler Street facade will be aligned with the Posner Hall facade to reinforce the street line and to allow sidewalk trees.

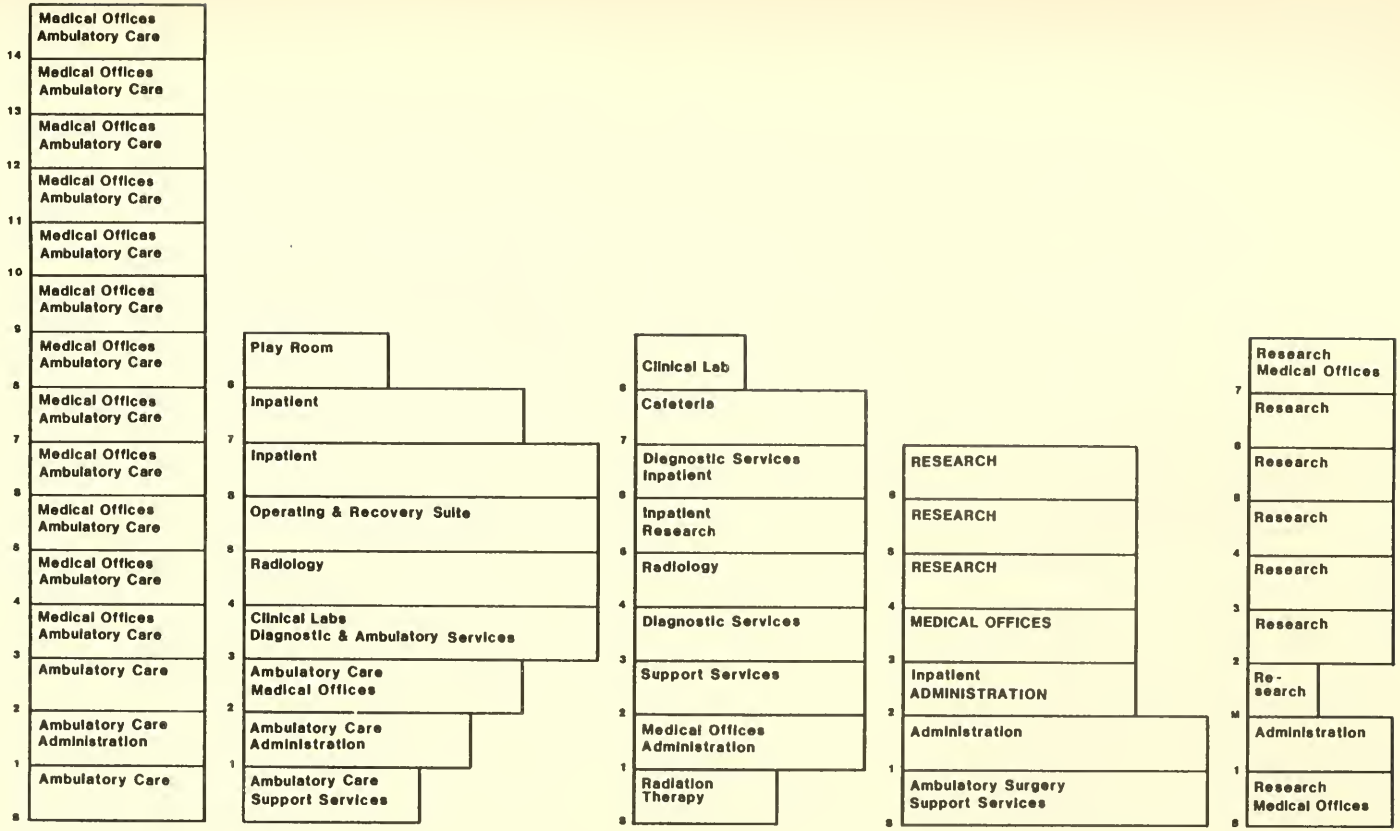
The Harrison Avenue facade will be set back from the curb line to allow for tree planting and generous pedestrian movement. Harrison Avenue from Kneeland to Oak Streets is a pedestrian boulevard through the University.

The exterior of the Building will be brick in keeping with the existing buildings. There will be generous windows to provide natural light and awareness of the outside to bench-bound researchers.

The Research Building layout will, with two wings of Posner Hall, form a small public plaza along Harrison Avenue at the foot of Nassau Street.

The first (ground) floor will be devoted to commercial space, reception and elevator lobbies, and service functions. The service entrance, and access to underground parking, will be from Harvard Street.

Floors Two and Three will be devoted to Veterinary School teaching and research, including a central animal facility serving the Medical Center and the University.



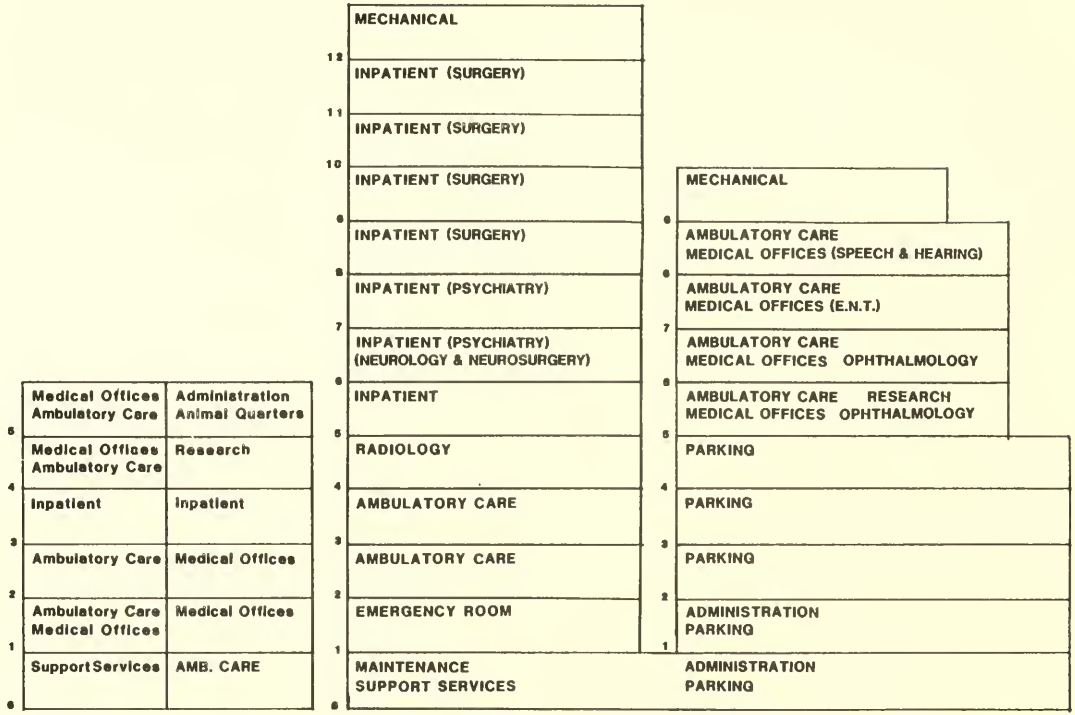
TUFTS UNIVERSITY AND NEW ENGLAND MEDICAL CENTER FACILITIES MASTER PLAN

NEW ENGLAND MEDICAL CENTER BUILDINGS

JANUARY 1992

EXHIBIT 4.9

NOTE: UPPER CASE LETTERS INDICATE A CHANGE IN FUNCTION FROM PREVIOUSLY DATED BLOCK DIAGRAMS



TUFTS UNIVERSITY AND NEW ENGLAND MEDICAL CENTER FACILITIES MASTER PLAN

NEW ENGLAND MEDICAL CENTER BUILDINGS JANUARY 1992

EXHIBIT 4.9

NOTE: UPPER CASE LETTERS INDICATE A CHANGE IN FUNCTION FROM PREVIOUSLY DATED BLOCK DIAGRAMS

Floor Four is the concourse level that connects across streets and connects University and Medical Center buildings. It will be occupied by administrative offices, meeting rooms and lounges serving the Building's occupants. They will have access to the roof terraces of the lower buildings on Tyler Street.

Floors Five through Twelve are occupied by research space.

Above the twelfth floor is a penthouse for mechanical equipment. Hood exhaust will be filtered here, and heat extracted before emission into the atmosphere. The underground part of the Building will also have mechanical equipment, including equipment to treat the various wastes, before disposal, especially those from the animal facility (see Exhibit 4.10).

This new research facility will serve several major needs of the Health Sciences Schools and the New England Medical Center. As first priority, this centralized facility will house the new animal facility which will bring all research animals to one site. This new facility will enable us to house on campus research animals currently located at various off-campus sites as well as provide for sophisticated holding areas with sterile environments, and special ventilation capabilities. With the expanded capacity for animal storage and maintenance, both current research needs and anticipated growth in research funding will be adequately met. This central facility will aid in the maintenance and management of research animals and the proposed concourse level will enable animals to be transported efficiently with a minimum of environmental variation.

This new facility will provide critical educational services and research laboratories for the Veterinary School. The large animal gross laboratory and the sterile surgical labs will provide sufficient space for required courses in the Veterinary School. Current space allocation for these activities is critically inadequate, with interim arrangements barely providing sufficient support. This new facility

will enable handling of large animal holding and anatomical inspection in an efficient and effective manner without undue burden on other waste management and air handling facilities.

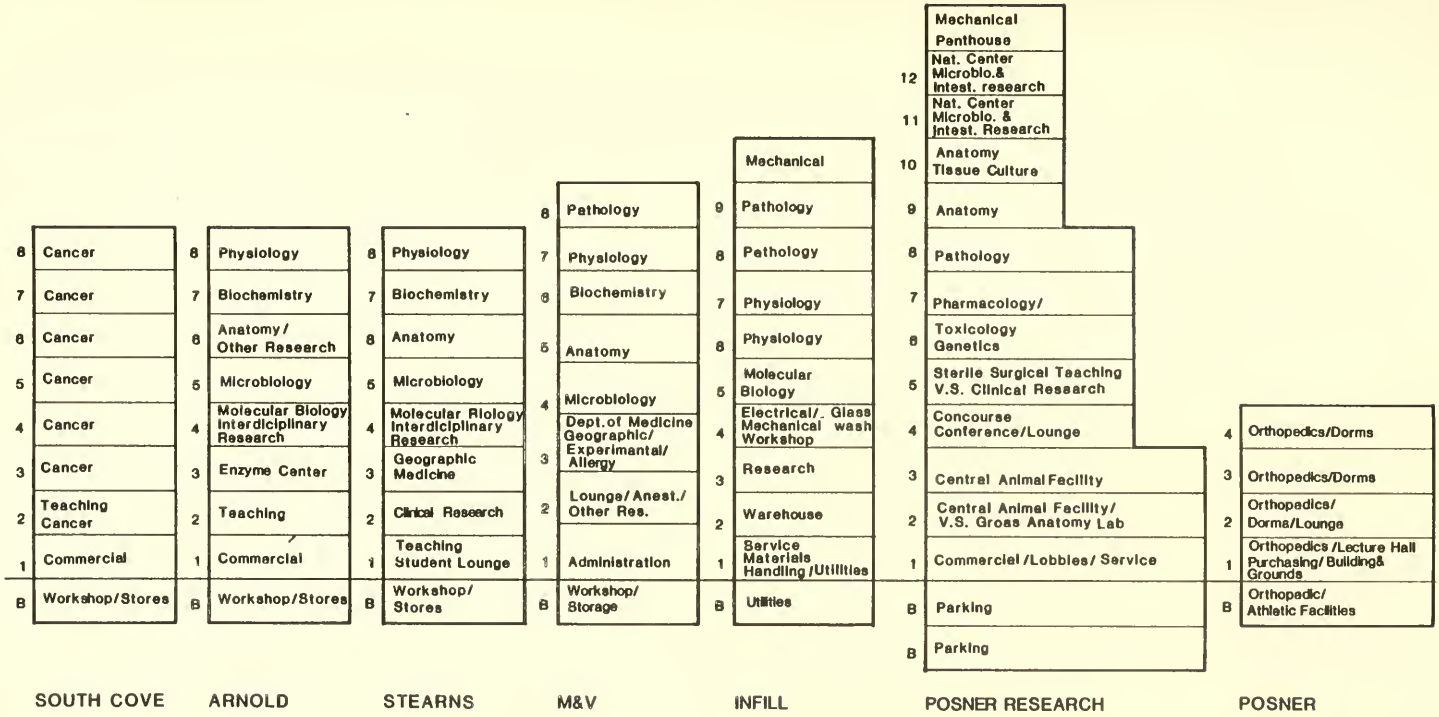
Clinical faculty laboratories will also be provided in the Posner Research facility for those Tufts veterinarians currently located at the Angell Memorial Hospital, serves as noted above. This small animal facility is prohibited by charter from allowing animal laboratory work on-site. The need for laboratory space for these faculty members will thus be met through the Posner Research Building.

With an emphasis on animal management and storage and handling, allocation of research space in this new facility will be based on the need for proximity to laboratory animals, special handling or ventilation needs or joint animal usage programs. This facility will be open to basic science faculty from the Health Sciences Schools and researchers from the Hospital. This increase in research space is expected to enable departments to meet current demands and expansion needs for both research space and animal storage.

- Infill Building/Posner Research Building Space Allocation:

On completion of the Posner Research Building, space in South Cove, Arnold, Stearns, and M&V will be temporarily vacant. Those spaces will be remodeled in conjunction with new construction, the Infill Building, in the space between South Cove and M&V. Construction will begin in Spring, 1990, with occupancy in January, 1992.

This project will consolidate Basic Science Departments that previously were dispersed, by reason of space available at the time, throughout the floors in four buildings.

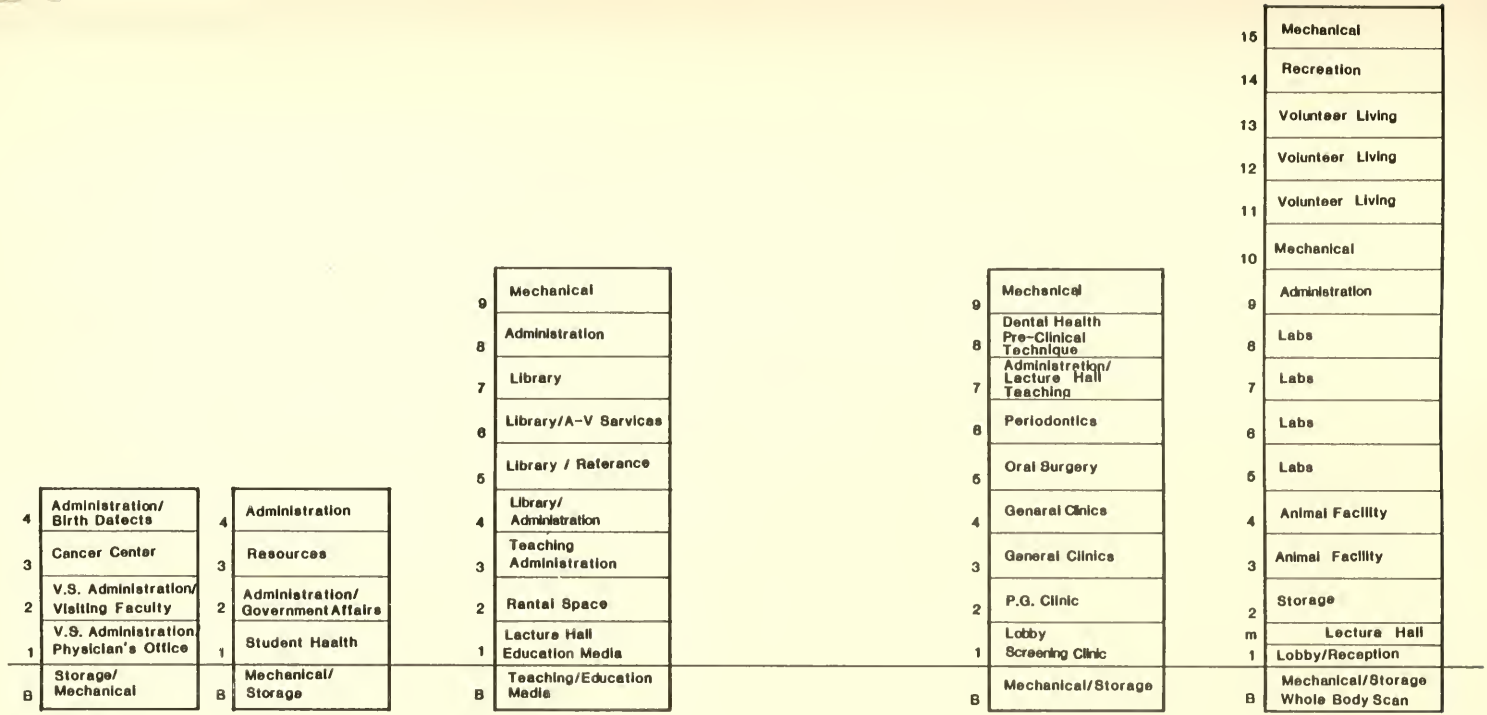


TUFTS UNIVERSITY AND NEW ENGLAND MEDICAL CENTER

FACILITIES MASTER PLAN

TUFTS UNIVERSITY BUILDINGS 1992

EXHIBIT 4.10



TUFTS UNIVERSITY AND NEW ENGLAND MEDICAL CENTER

FACILITIES MASTER PLAN

TUFTS UNIVERSITY BUILDINGS 1992

EXHIBIT 4.10

The Infill Building will be a mechanical/utility equipment core that allows the retrofitting of worn and piece-meal systems in the four existing buildings (Exhibit 4.10). It will also be a new circulation system that mediates the non-aligning floors among the four buildings.

The first and second floors will be devoted to service functions, including loading dock and materials handling.

The third through ninth floors will be research support. The roof will be used for mechanical equipment related to heat recovery, emission control and energy storage. The below-ground part of the Building will house utilities, building systems controls and also energy storage.

Two major goals will be met with the construction of this new facility. Departmental need for research space for Medical School, Veterinary School and Graduate Programs will be resolved. This resolution will include the development of a new Department of Pharmacology and a new research program in medical genetics. The Infill Site will allow for the provision of contiguous research space for those investigators not served by the Posner Research Building. The emphasis on contiguity and shared research interest will be facilitated through the design of the Building and the location of the site. Proximity to the Posner animal quarters will allow for efficient animal handling and department research priorities will be easily facilitated.

In addition, this new building will provide much needed warehousing and storage space for research and academic departmental needs. The provision of this type of space will allow for the construction of essential research support shops such as repair shops, glassblowing, electronics, and machine shops. These important services have not been centrally developed since there has not been adequate space for housing these activities in a central location. With the availability of a warehousing and materials handling facility as part of the Infill Building, it will be possible to develop such centralized functions, including autoclave and dishwashing facilities (see Exhibits 4.10).

4.3 Proposed Site Amenities

As part of facilities renovation and development during the ten year Master Plan period, described above, opportunities occur to upgrade and renovate the site itself. The priorities summarized in Chapter Three, Section 4 were utilized in developing the plans for public areas, land usage, commercial spaces and recreation facilities as part of the Master Plan. There will be significant improvement in all of these areas as the facilities renovation and development program proceeds during the ten year period. Exhibits 4.11 & 4.12 illustrate site amenities changes.

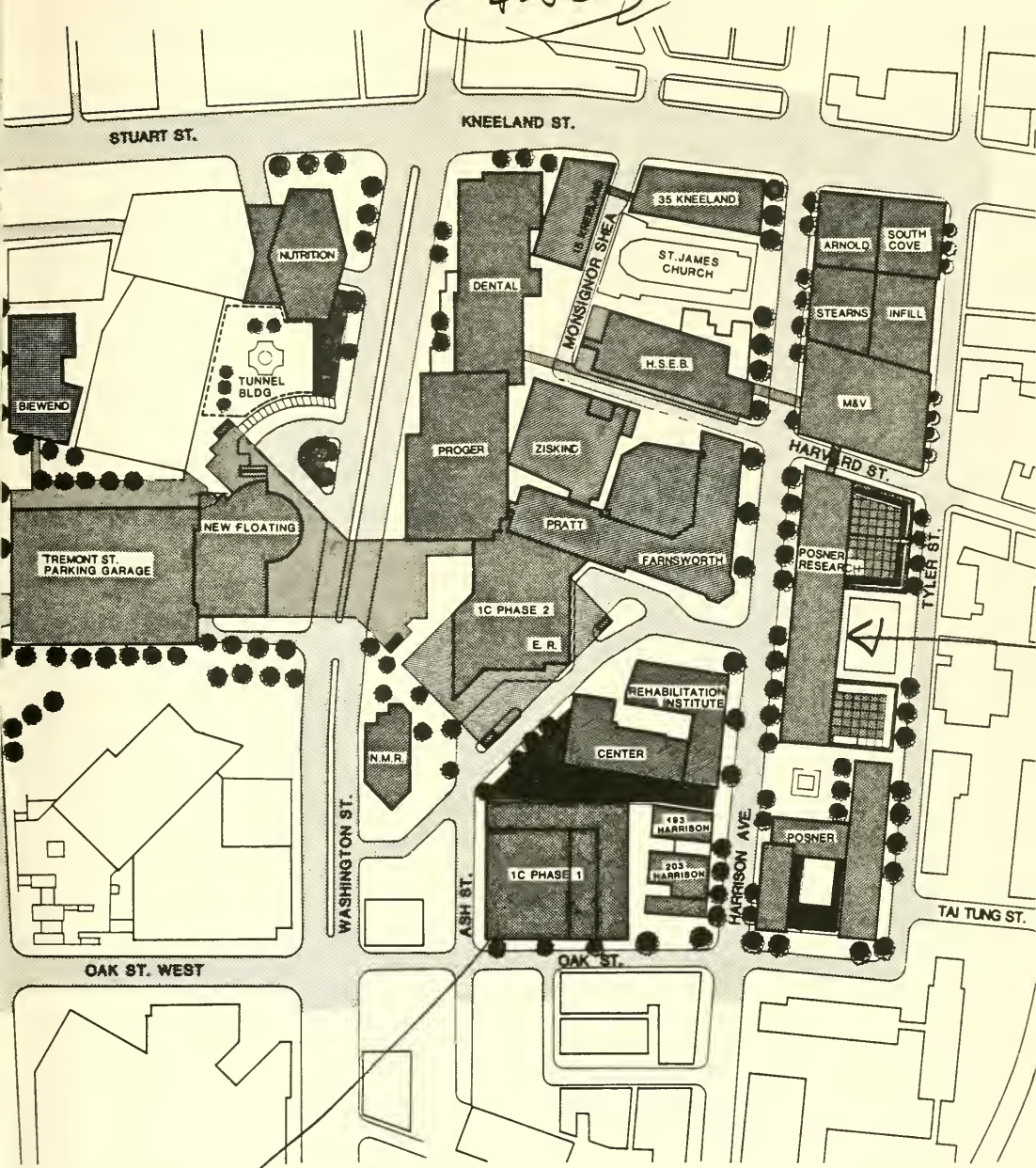
Site Amenities

- Campus Boulevard

New buildings along Harrison Avenue from Kneeland to Oak Streets will be set back from the street to allow for tree planting, benches, kiosks, and ample pedestrian circulation. This "boulevard" will give an identity to the main axis of the campus.

- Posner Plaza

A small open space will be formed opposite Nassau Street by the existing Posner Hall and the new research building. This will be an outdoor area for the students in Posner Hall, and an entry space for the research building. It will also be a visual terminus for Nassau Street, which becomes a car-free pedestrian way upon the completion of NEMC's 1C project.



Parking / mix / match

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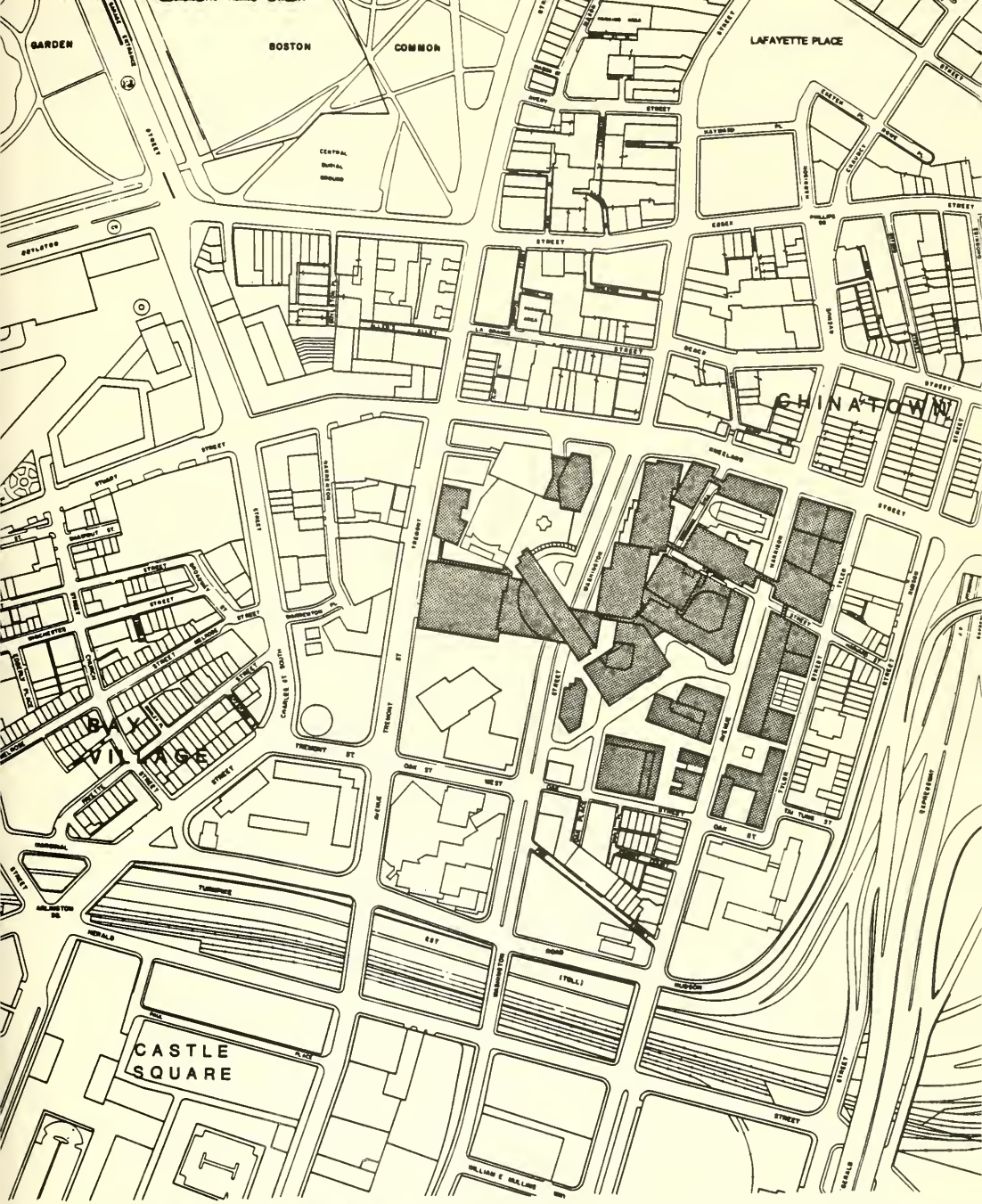
EXHIBIT 4.1



FTS UNIVERSITY AND NEW ENGLAND MEDICAL CENTER
CILITIES MASTER PLAN • NEIGHBORHOOD PLAN 1992

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EXHIBIT 4.12

- Health Sciences Education Building

A quiet courtyard will be created, opening off Harrison Avenue, between the St. James Church and Tufts Health Sciences Education Building.

- Pedestrian Route

Pedestrian greenway presently extends from the park next to WMEX in Bay Village, across to the park of the Church of All Nations, across Tremont Street to the Tremont Street Garage, a new walkway will be made along the south side of the garage to Washington Street and the MBTA. Across Washington Street, beside the Medical Center's 1C Project, the pedestrian route will run down Nassau Street and cross Harrison Avenue to the new plaza at Posner Hall.

- Roof Terraces

The roofs of the new buildings facing Tyler Street will be developed for outdoor use, accessible directly from the concourse level of the new Posner Research Building.

- Floating Hospital Plaza

The open space between the Nutrition Building and the Floating Hospital will be a plaza, that will make the transition from the Tremont Street entrance of the Medical Center to the one-story lower Washington Street entry and the new MBTA station.

Commercial Space

It is important to have commercial space to meet the needs of the Tufts University/New England Medical Center community as well as the surrounding community.

- The sites at street level planned for commercial use are:

  - Dental Building - already commercial
  - Arnold Building - already some commercial
  - 15 & 35 Kneeland Street - already some commercial
  - Posner Research Building - the Harrison Avenue frontage

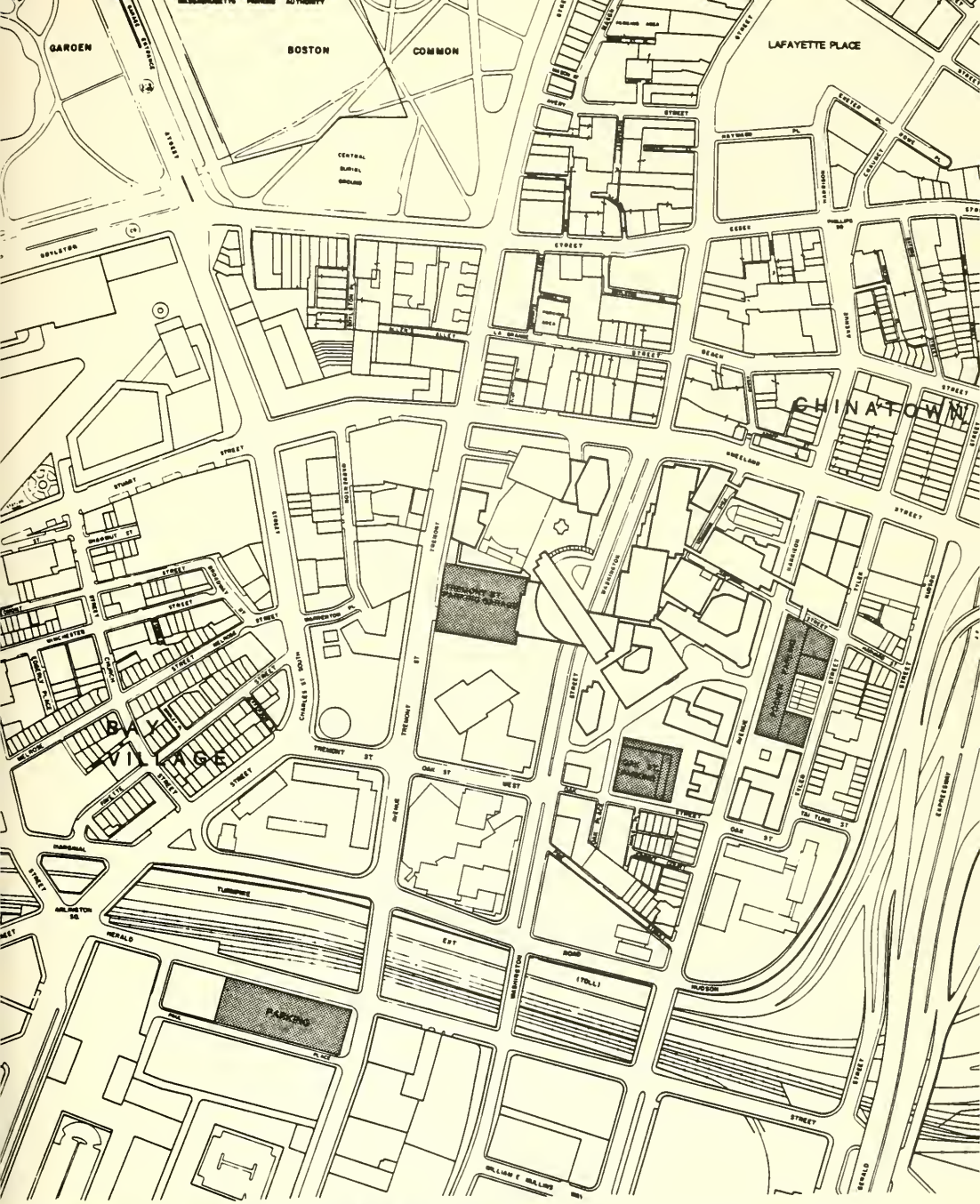
- The potential uses that the Tufts University and New England Medical Center community have identified are:

  - Tufts University Coop (similar to Harvard's Coop)
  - Neighborhood restaurants
  - 24 hour grocery store/newstand
  - CVS-type store
  - Services such as dry cleaning, florist, tailor, shoe repair, travel agent

Parking

As described in Chapter 3, there are 1,738 parking spaces currently available for use by Tufts University and the New England Medical Center. During the period of the Master Plan, 1982-1992, 329 surface spaces will be eliminated as part of the renovation process and replaced when the construction of new facilities is complete.

During the 1982-85 period of development, it is expected that 42 spaces on campus will be lost due to construction. These spaces will be replaced by off-site parking until the completion of 1C, Phase I. By 1985, Tufts University and New England Medical Center plan to build/lease parking for approximately 500 cars at an off-campus location to be determined.



TUFTS UNIVERSITY AND NEW ENGLAND MEDICAL CENTER

FACILITIES MASTER PLAN • PARKING PLAN 1992

EXHIBIT 4.1

Phase one of the 1C project will create 300 parking spaces, replacing the 42 spaces noted above, the 95 spaces on the Oak Street lot (which is the site of 1C Phase I) and partially replacing the 192 spaces in the Posner Lot, the site of the Posner Research Building. The Posner Research Building will contain approximately 100 spaces in its below grade portion (see exhibit 4.13).

Housing

In June, 1982, at the request of the Chinese community (The Chinese Consolidated Benevolent Association), Tufts and New England Medical Center met with them to discuss areas of potential mutual cooperation in housing. At the meeting, it was apparent that the Chinese community considers mixed-income family housing to be of the highest priority.

It was also determined through the data collection process for the development of this master plan that the Health Sciences campus has need for a minimum of 400-500 units of housing for students, staff, and faculty. Exhibit 4.14 illustrates existing or soon-to-be completed housing adjacent to the Tufts and New England Medical Center complex.

Because joint development in housing is so clearly beneficial and necessary to both parties, a task force with representatives from both Tufts and New England Medical Center and the Chinese community was established. A housing consultant with a national reputation in housing development in low income minority neighborhoods was asked to undertake a study of options and solutions for housing. After doing a survey of this neighborhood and the surrounding areas, he recommended to the task force that the soon-to-be-vacated garment factory buildings should be targeted for rehabilitation/renovation for housing. In his judgment, this option presents the most realistic alternative because it is cost-effective; it would make optimal use of old buildings; and it would alleviate the housing needs of both Tufts and NEMC and the Chinese community.

OSCAR Newman

This concept was accepted in principle by the Chinese community, and we are in the process of working out a close working partnership. It is anticipated that a proposal for joint development will be forthcoming.

Recreation

There is a paucity of accessible recreational facilities of any kind available to the Tufts and NEMC community. The YMCU on Boylston Street, the YMCA on Tyler Street, the outdoor basketball court on Oak Street, and the Quincy School are all heavily utilized by the neighborhood. Tufts University and New England Medical Center plan to explore the establishment of recreational facilities of the following types:

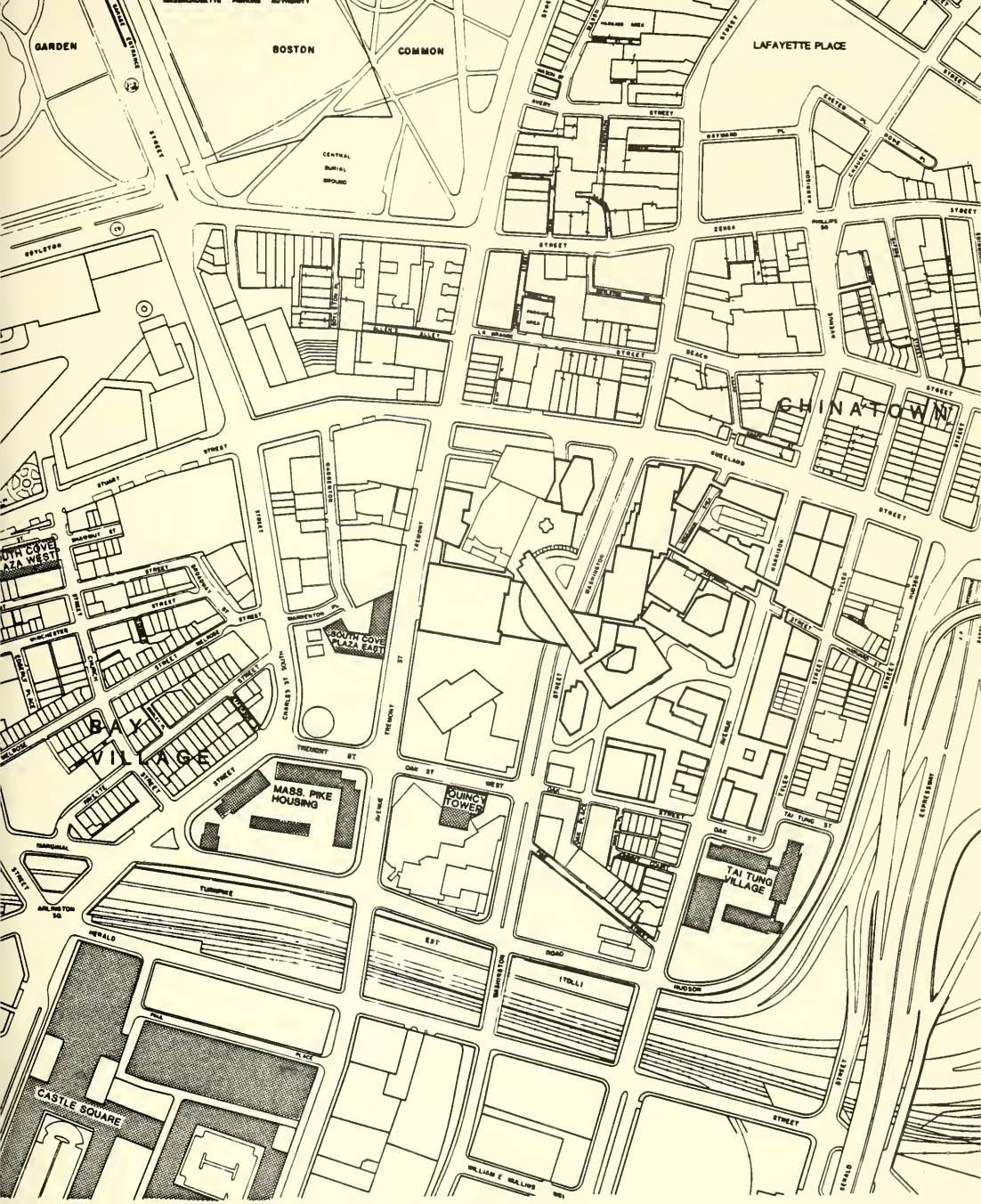
- Posner Hall - light recreation, in the basement, for residents and visitors, consisting of such activities as billiards, ping-pong, weight room, nautilus, and sauna.

- Top of Dental Building - faculty club, squash courts, nautilus, jogging track.

- Neighborhood - encourage the development of large scale facilities, such as gymnasium and swimming pool, open to the public.

Community Use

In addition to improved site amenities and expanded commercial space, which will benefit the community, the auditorium in the Health Sciences Education Building will be available for use during off-hours by community groups in the neighborhood. Smaller meeting rooms in the Health Sciences Education Building and in the 1C Building will also be made available to community groups.



FTS UNIVERSITY AND NEW ENGLAND MEDICAL CENTER
CILITIES MASTER PLAN • HOUSING PLAN 1992

EXHIBIT 4.14

5. SUMMARY AND CONCLUSION

The Facilities Master Plan for 1982-1992 prepared by Tufts University and New England Medical Center describes their facility replacement and development plans as these plans are envisioned by the two institutions today, in the Fall of 1982. Institutions like the Tufts Health Sciences Schools and New England Medical Center are dynamic organizations which respond to internal and external forces for change, in some cases unable to overcome obstacles to a preconceived plan and in other cases carried forward toward a new course of action.

Therefore, modifications in our Facilities Master Plan are expected. Some of these changes will be generated by internal events; others will be responses to outside opportunities or pressures. One example cited in our chronology of Master Plan development prior to 1982 was the decision in the mid-1970's to give up plans to demolish the Metropolitan Center (then the Music Hall) and Wilbur Theater, and thus give up our right to develop this area as well as the parcel of land on Stuart Street between Tremont and Washington Streets. This decision was made by New England Medical Center and Tufts University when it was recognized that the redevelopment of the theater district would go forward.

It is important to emphasize that most of the changes made in our Master Plan since the 1960's have represented reductions in the land area that we occupy or plan to develop. The decision not to build all the way to Tremont and Stuart Streets, cited above, is one example of land reduction. Another was the decision to give up part of the land where Tai Tung Village and the Quincy School complex are now. Tufts University and NEMC also gave up our first refusal rights on development of the area between Oak Street and the Massachusetts Turnpike. All of these decisions together represent a significant reduction in the amount of land we include in our present campus area. They also confirm our commitment to evaluating our internal needs in relation to urban planning considerations and the broader goals of neighborhood development.

As described in detail in the previous chapters, our major goal now is to modernize and replace our facilities using our existing land area. Our mission is to continue present programs with no expansion of patient care services or teaching activities. Critical inadequacies in educational and library facilities will be addressed. A modest expansion and redirection in our present research programs is planned in order to correct overcrowding problems and space inadequacies. New sources of research funding are available to us as a major academic health center with new strengths in human nutrition research and cardiovascular research, combined with our existing excellence and leadership in hematology-oncology, infectious diseases, and other related areas.

A special emphasis is placed in the Master Plan on integrating the plans of Tufts University and New England Medical Center, not only in our plans for educational and research programs but also in developing an integrated plan for public space, plazas, walkways, green space, and community use areas. For each period of development (1982-1985 and 1986-1992), a phased-in plan for improving these site amenities is presented. Our joint planning activities for housing development and parking alternatives are also discussed in the Master Plan. Recent progress made in these two important planning areas is reviewed and the

process for continuing the planning process is outlined.

As with any ten-year Master Plan, our focus is now on implementing the first steps of the plan. New England Medical Center is beginning construction in November on its Biewend Ambulatory Care Center, and during the fourteen-month construction period will be completing plans for the reuse of space to be vacated when the new Ambulatory Care Center opens in January of 1984. Also during the next calendar year, 1983, many of the components of the Shuffle Space Project will be implemented, continuing the consolidation of critical care services through the reuse of space available after the opening this Fall of our New Floating Hospital Building.

Tufts University is focusing its efforts during 1983 on two projects. The major emphasis will be on completing the program and architectural plans for construction of the new Health Sciences Education Building. This building is tentatively scheduled to begin construction in March, 1983. The second project is the conversion of space formerly occupied by the Boston School of Occupational Therapy into research facilities. This is the first step of the phased plan to create much needed additional research and animal facilities for Tufts and New England Medical Center.

The next ten years will be challenging ones for academic medical centers, as they face budget cuts and regulatory pressures. The Facilities Master Plan presented here is one that we share a commitment to implementing because we believe it is realistic, practical, and feasible. Most importantly, it is consistent with and builds upon our present missions and strengths.

APPENDICES

1. Description of Existing Buildings

2. 1966 Cooperation Agreement and
   1968 Supplement

3. Analysis of Research Space

4. New England Medical Center Hospital
   Building Evaluation Criteria

5. New England Medical Center Hospital
   Pratt-Farnsworth Buildings
   Nursing Units Renovation Study

6. Summary of Accreditation Review Comments

7. Flansburgh Report

8. Animal Facility Review

Appendix 1: Description of Existing Buildings

New England Medical Center

New England Medical Center occupies nearly 100% of the space in 12 buildings which it owns and also rents space in 11 other buildings. Hospital-owned buildings include: Pratt, Farnsworth, Ziskind, Rehabilitation Institute, Center, Proger, a portion of the Dental Sciences Building, Jackson, Classroom, Hemenway, Floating Hospital, Boston Dispensary, and Biewend. These buildings were constructed in 1938, 1947, 1925, 1958, 1982, 1930, 1973, 1930, before 1900, 1915, 1883, and 1924 respectively. Most of the buildings are on the hospital's main site; all others are within walking distance. A brief description of each of the buildings owned by the hospital follows:

The Floating Building is of fire-proofed steel frame reinforced concrete slab construction; built in 1982. It has 8 floors with no basement level. It spans Washington Street and is irregularly shaped. It has four elevators and is centrally heated and air conditioned. Steam is supplied as a utility purchased from Boston Edison Co. It has 282,390 gross square feet. It has a licensed capacity of 100 beds. The building is in compliance with institutional health care standards, safety regulations and the Architectural Barriers Boards requirements. No deficiencies exist.

The Pratt Building is of fire-proofed , steel frame reinforced concrete slab construction built in 1938. It is 6 stories plus one basement level. It is a rectanguler structure and is faced with red brick and limestone trim. It has two elevators and is heated and air conditioned by unitary equipment. Steam is supplied as a utility purchased from Boston Edison Company. It has 51,766 gross square feet. It has a licensed capacity of 100 beds. The building is in compliance with most institutional health care standards, safety regulations and Architectural Barrier Board's requirements.

The Farnsworth Building is a fire-proofed, steel frame reinforced concrete slab construction built in 1947. It is 6 stories plus one basement level. It is an L-shaped structure and is faced with red brick and limestone trim. It has three full height elevators, 2 1-story elevators and 2 full height inoperative dumbwaiters. It is heated and air conditioned by unitary equipment with the exception of central air conditioning equipment serving the O. R. suite and two ICU suites. Steam is supplied as a utility purchased from Boston Edison Co. It has 100,264 gross square feet. It has a licensed capacity of 135 beds which includes 21 intensive care beds and 10 clinical study unit beds. It also has a 7-room O. R. suite (presently unoccupied). The building is in compliance with most institutional health care standards, safety regulations and Architectural Barrier Board's requirements.

The Ziskind Building is of reinforced concrete construction built in 1925. It is 7 stories plus one basement level. It is a rectangular industrial-style building and is faced with exposed concrete buff-colored brick. It has two elevators. It is heated and air conditioned by a combination of unitary equipment, local coverage, central equipment and specialized central equipment for special occupancies. Steam is supplied as a utility purchased from Boston Edison Co. It has 100,955 gross square feet. It has no beds. Its primary occupancy is research laboratories and related animal quarters. Other occupancies include hospital administrative and medical department offices, several diagnostic X-ray room, anatomic pathology, and the clinical chemistry laboratory. The building is in compliance with most of the institutional health care standards, safety regulations and Architectural Barrier Board's requirements. There are no deficiencies.

The Rehabilitation Institute Building is of fire-proofed, steel frame reinforced concrete slab construction built in 1958. It is 6 stories with no basement. It is an L-shaped structure and is faced with red brick. It has two elevators and is heated and airconditioned by unitary equipment. Steam is supplie as a utility purchased from Boston Edison Company. It has 53,907 gross square feet. It has a licensed capacity of 25 rehabilitation beds. Other principal occupancies include the Emergency Department on the first floor. The building is in compliance with most institutional health care standards, safety regulations and Architectural Barrier Board's requirements.

The Proger Building is reinforced concrete construction built in 1973. It is 9 stories plus one basement level. It is a rectangular structure and is faced wi pre-cast concrete panels. It has 6 elevators and is centrally heated and air conditioned. Steam is supplied as a utility purchased from Boston Edison Co. It has 187,343 gross square feet. It has a licensed capacity of 44 beds including 10 intensive care beds. The building is in compliance with institutional health care standards, safety regulations and most Architectural Barrier Board's requirements. No deficiencies exist.

The Dental Health Science Building is of fire-proofed steel frame reinforced concrete slab construction, built in 1973 simultaneously with and as a contigous structure of the Proger Building. It is 9 stories plus one basement level. It is a rectangular structure and is faced with pre-case concrete panels. It has 3 elevators and is centrally heated and air conditioned. Steam is supplied as a utility purchased from Boston Edison Co. It has 220,424 gross square feet.

It has a licensed capacity of 48 beds. The building is a Tufts University owned building in which New England Medical Center owns and occupies two half floors as impatient nursing units. Both floors are contigous with identical inpatient nursing units in the Proger Building. The building is in compliance with institutional health care standards, safety regulations and most Architectural Barrier Board's requirements. No deficiencies exist.

The Jackson Building is reinforced concrete construction built in 1930. It is 4 stories plus one basement level. It is a rectangular structure and is faced with red brick. It has one elevator and is heated and air conditioned by unitary equipment. Steam is supplied as a utility purchased from Boston Edison Co. It has 24,504 gross square feet. It has no beds. The building is in compliance with most institutional health care standards, safety regulations and Architectural Barrier Board's requirements.

The Classroom Building is of brick bearing wall and joist construction built before 1900. It is 2 stories. It is a rectangular structure. It has no elevators and is heated and air conditioned by unitary equipment. Heating and hot water is supplied from a boiler in the building. It has 3,072 gross square feet. It has no beds. The building complies with most safety regulations and minimum Architectural Barrier Board's requirements. No documented citations.

The Hemenway Building is of fire-proofed, steel-frame reinforced concrete slab construction built in 1915. It is 4 stories plus one basement level. It is a rectangular structure and is faced with brown brick and stucco. It has no elevators and is heated and air conditioned by unitary equipment. Heating and hot water is supplied from a boiler in the building. It has 10,550 gross square feet. It has no beds. It houses administrative offices. The building is in compliance with most institutional health care standards, safety regulations and few Architectural Barrier Board's requirements. No documented citations.

The Boston Dispensary Building is of cast-iron column, brick bearing wall, wood beam and joist floors built in 1883 with 2 additions of fire-proofed steel-frame and reinforced concrete slab construction. The original building is 4 stories plus one basement level. Two additions are 3 stories plus one basement level. It is a series of three attached rectangular shaped structures faced with red brick and brownstome trim. It has one elevator and is heated and air conditioned by unitary equipment serving an O. R. suite and cystoscopy suite. Steam is supplied as a utility purchased from Boston Edison Co. It has 47,350 gross square feet. It has no licensed beds. The building is in compliance with many institutional health care standards, safety regulations and Architectural Barrier Board's requirements. No documented citations.

The Biewend Building is of fire-proofed, steel-frame reinforced concrete slab construction built in 1924. It is 14 stories plus one basement level. It is structurally integral with an adjacent 4,000-seat theater at its lower three floor. It is a U-shaped structure and is faced with ornamental cast concrete stone and buff-colored brick. It has three elevators and is heated and air con ditioned by unitary equipment and small central air conditioning equipment serving some half-floor occupancies. Steam is supplied as a utility purchased from

Boston Edison Co. It has 145,000 gross square feet. It has no beds. Hospital department space includes outpatient clinics and related medical staff offices, administrative functions and research. Part of the building is occupied by commercial tenants or is vacant. The building is in compliance with many institutional health care standards, safety regulations and Architectural Barrier Board's requirements. No documented citations.

The Center Building is reinforced concrete construction built in 1930. It is 5 stories plus one basement level. It is a rectangular structure with a 3-story L and is faced with red brick. It has two elevators and is heated and air conditioned by unitary equipment. Steam is supplied as a utility purchased from Boston Edision Co. It has 49,331 gross square feet. It has a licensed capacity of 10 beds. It contains some pediatric and adult out-patient areas and medical office areas. The building is in compliance with most institutional health care standards, safety regulations and Architectural Barrier Board's requirements.

TUFTS UNIVERSITY
Boston Campus

The Tufts University Medical and Veterinary Schools are basically housed in four (4) reconstructed buildings. These buildings were constructed around the turn of the century and were occupied by various companies in the garment industry.

The M & V Building was purchased in 1945, it is of fireproof reinforced concrete construction and has a red brick veneer. The building was originally five (5) stories and a full basement. At some time before our purchase three (3) additional floors were added. The building is fully sprinkled and has two elevators. Heating and Process steam for research is purchased from Boston Edison Company. Air conditioning is accomplished by a number of central systems and auxiliary window units. The building has 126,000 gross square feet.

The Stearns Building was purchased and renovated in 1959; it is of fireproof, reinforced concrete construction. The building has eight (8) stories and a basement level for shipping/receiving, and mechanical equipment. Steam is purchased from Boston Edison Company for heat and research. The building has one central air conditioning system, one passenger, one freight elevator.

The first three floors have been used for classroom space; the remainder primarily research. The fourth floor houses research animals and has a small pathological incinerator.

Each floor has 6000 gross square feet for a total of 54,000 gross square feet.

The Arnold Building is of fireproof, reinforced concrete construction and fully sprinkled. The building has eight (8) stories and a full basement. There are two passenger elevators; steam for heat and research supplied by Boston Edison Company. Air conditioning is provided by several central systems and augmented by window units. The building has 54,000 gross square feet, first floor is commercial space, second floor classrooms, fourth administration, the remainder for research.

The South Cove Building is also fireproof and of reinforced concrete construction and fully sprinkled. It has eight (8) stories and a full basement. Steam for heat and research supplied by Boston Edison Company. Each floor has it's own central air conditioning system and is serviced by one passenger/freight elevator.

The first floor is occupied by the Personnel and Accounting Departments. The second floor is comprised of teaching laboratories and the remainder of the building faculty research laboratories.

Each floor has 5,000 gross square feet with a total of 45,360 gross square feet.

DJE/emf
cc: L. L. Meinerth

APPENDIX 2: 1966 Cooperation Agreement

1968 Supplement

COOPERATION AGREEMENT

THIS AGREEMENT, made and entered into this 17th day of January 1966 by and between the Boston Redevelopment Authority, hereinafter called the "Authority", and the Tufts-New England Medical Center, an alliance pursuant to Chapter 40 of the Massachusetts Acts of 1930, as amended, of New England Medical Center Hospitals and Trustees of Tufts College, two charitable corporations organized under the laws of Massachusetts, said corporations acting jointly through said alliance and individually being hereinafter called the "Medical Center".

WHEREAS, the Authority has undertaken surveys and planning in connection with the South Cove Urban Renewal Project, No. Mass. R-92;

WHEREAS, an Urban Renewal Plan for the reconstruction and rehabilitation of blighted and deteriorating areas in the South Cove Urban Renewal Area, hereinafter called the "Project Area", has been prepared and approved by the Authority pursuant to the 1949 Housing Act, as amended, and Chapter 121 of the General Laws, as amended, and is attached hereto;

WHEREAS, the basic objective of urban renewal action in the South Cove Urban Renewal Area is to eliminate severe conditions of blight, deterioration, obsolescence, traffic congestion, and incompatible land uses in order thereby to facilitate sound development and orderly growth, and to achieve neighborhood stability. Specifically, the objectives are:

1. To promote and expedite public and private development.
2. To cause the rehabilitation and redevelopment of the South Cove as a stable neighborhood compatible in function and design with the neighboring Central Business District, the Back Bay, and the South End area.
3. To preserve and strengthen the residential character of the area in such a way as to promote and insure its future.
4. To facilitate efficient use of land in the area for housing, commercial and institutional use.
5. To strengthen and expand the real property tax base of the city;

WHEREAS, the Urban Renewal Plan provides for the acquisition by the Authority of certain land referred to in Chapter IV of the Plan and shown on the Property Map, which is a part of the Urban Renewal Plan;

WHEREAS, the Urban Renewal Plan provides for the disposition of such land as shown on the Disposition Plan, which is a part of the Urban Renewal Plan, for the uses and in accordance with the land use and building requirements contained in Chapter VI of the Urban Renewal Plan;

WHEREAS, the Medical Center desires to acquire certain property located in the Project Area for its proposed expanded facilities and intends to develop such property for such purpose in accordance with the Urban Renewal Plan;

cludes $2,141,252 in Section 112 credits representing expenditures made between June, 1958 and June, 1962 by the Medical Center for the acquisition of land and the demolition of buildings, which expenditures have been certified to by the Medical Center so as to make such expenditures available for Section 112 credits; and

WHEREAS, it is desirable to implement the provisions of the Urban Renewal Plan in order to accomplish the objectives of the Plan by specifying the actions to be undertaken by the Medical Center and the Authority, respectively.

NOW, THEREFORE, the parties hereto mutually agree as follows:

1. Acquisition

   A. Upon final approval of the Urban Renewal Plan, the Authority shall acquire the property referred to in Section 401 of Chapter IV of the Plan and shown on the Property Map as "Property to be Acquired" at prices established in accordance with the procedures of the Authority and regulations of HHFA and subject to concurrence by HHFA.

   B. The timing of the acquisition of any property containing parking spaces presently designated for Medical Center use insofar as possible will be coordinated with the availability of other suitable sites in the Project Area that can be temporarily used for Medical Center parking.

II. Disposition

A. Following acquisition, the Authority shall dispose of the parcels referred to in Chapter VI of the Plan and shown on the Disposition Plan in accordance with the regulations of HHFA governing practices for land disposition and pursuant to a land disposition agreement in a form similar to the ones currently employed by the Authority and in conformity with regulations of HHFA and which is approved by HHFA, at prices established in accordance with the regulations of HHFA and subject to HHFA concurrence.

B. The Authority shall sell and the Medical Center shall acquire and develop those institutional reuse parcels that are marked P-2 through P-11 in accordance with the land use and building requirements contained in Chapter VI of the Plan, provided that the properties in Tyler Street, Block 447, Parcels 5108 to 5111-1, inclusive, Disposition Parcel "P-2A", will not be sold by the Authority until such time as (i) new relocation housing has been built on Disposition Parcel "R-2", (ii) the Medical Center has demonstrated to the satisfaction of the Authority that it has sufficient need for such properties, and, (iii) the Authority's staff

has reviewed and approved the Medical Center's plan for a small park which the Center will own, develop and maintain between Tyler Street and Harrison Avenue accessible for public use and providing for pedestrian movement between the two streets.

C. The Authority will make application to the Public Improvements Commission for the closing of the following streets in conformity with the Plan and will take such action, if any, as is required by it to insure Medical Center ownership thereof: Dore Street (partial), Dillaway Street, Hollis Street (partial), Common Street (partial), Bennet Street, Ash Street (partial), Nassau Street, May Place (partial), Hollis Square (partial) and Bates Place. This program of street closings will follow a timetable related to the schedule established for adjacent parcels and the schedule established for the construction of other street improvements in the South Cove Project Area.

D. The Medical Center shall maintain a right-of-way between Tremont and Washington Streets along the property line between property of the Don Bosco Technical High School and the Medical Center adequate in width to service its facilities, and

provide pedestrian access into all properties adjacent thereto, and preserve an adequate right-of-way for the benefit of the Don Bosco Technical High School allowing adequate vehicular access by such School to its proposed buildings adjacent to said property line. In addition, a minimum distance of 190 feet shall be left between the southerly corner of the Music Hall and the new property line to the south.

III. MBTA

The Authority will seek to acquire the right-of-way of the MBTA as soon as the MBTA determines that this right-of-way is no longer needed for the Forest Hills line. If the Authority acquires this right-of-way, it shall then make available to the Medical Center the property upon which the right-of-way (whether on, above, or below the surface) lying north of Oak Street is presently located for purposes that are consistent with the objectives of the Urban Renewal Plan.

IV. Disposition Time Schedule

Upon request of the Authority, the Medical Center shall supply, and review from time to time, a time schedule for when it will require Parcels P-2

D. The Authority will support the Medical Center in obtaining permission from the City's Public Improvement Commission to build across, subject to approval of the design of the bridge structure by the Authority, Washington Street or other rights-of-way in accordance with an approved Medical Center site plan.

IX. Wilbur and Music Hall

During the period ending January 1, 1980 and subject to the conditions hereinafter set forth, the Medical Center shall lease both the Music Hall and Wilbur Theatre properties to theatre tenants as long as each of such properties provides the Medical Center with a return (net of taxes, expenses, etc.) at least equal to that received from such property in 1965.

Even if such theatre properties are providing the Medical Center with a return (net of taxes, expenses, etc.) at least equal to

that received from such theatre properties in 1965, the Medical Center may change the use of either or both of such properties, provided (i) it guarantees to the City until 1980 tax payments, or payments in lieu of taxes, from the property owned by it in the block bounded by Stuart, Tremont and Washington Streets and the Don Bosco School (in addition to any payments relating to commercial uses in the first floor or other appropriate floors of Medical Center buildings to be located along Stuart Street) which at least equal the amount of taxes received from such theatre property in 1965, and (ii) in the case of the Wilbur Theatre, it provides a replacement in kind at or about its present location.

X. Commercial Uses

A. The Medical Center shall make available suitable commercial uses in the first floor and shall endeavor to make available suitable commercial uses in other appropriate floors of Medical Center

through P-11. The Authority shall endeavor to make such properties available in accordance with the time schedule.

V. Design Review

The Medical Center will submit all site plans and building plans for all contemplated new uses constructed or sponsored by the Medical Center for design review and approval by the staff of the Authority in accordance with the Authority's design review procedures. Such review is concerned with the massing and arrangement of buildings, provision of open space, pedestrian walkways, and the exterior appearance of individual buildings.

VI. Housing

The Medical Center hereby indicates its interest in endeavoring to become a sponsor for new housing within appropriate areas designated for such use in the Plan. The Authority will consider such proposals as the Medical Center may set forth at the time of their submission.

VII. New MBTA Route

The Medical Center shall grant to the MBTA, at no cost, easements if any are required through its property for the location of a new MBTA route, the

basic location of which is shown on the attached plan, together with such reasonable temporary easements necessary for the construction of any part of such route which is located on property of the Medical Center.

VIII. Public Improvements

A. The Authority shall make application to the Mayor for the funds necessary to implement all public improvements pursuant to the terms of a Cooperation Agreement between the City of Boston and the Authority, a copy of which is attached. Such public improvements shall include a street tree-planting program for the entire South Cove Project Area.

B. The Authority shall endeavor to cause such public improvements to be constructed in accord with a time schedule consistent with the development time schedule of the Medical Center.

C. The Authority is presently studying the alignment of Stuart Street and will endeavor insofar as possible to avoid thereby narrowing the property adjacent to the Wilbur Theatre. The Authority will also explore the possible use of arcades in order to accommodate a widened right-of-way and sufficient building footage in that location.

buildings to be located along Stuart Street between Tremont and Washington Streets. The Medical Center shall, prior to the executing of a land disposition agreement for such properties give assurances satisfactory to the Authority of the types of commercial space to be contained in such commercial properties and of the natu of its arrangements with the City to provide the equiva lent of full taxes on such commercial space, such arrangements to be acceptable to the City and the Autho

B. The Medical Center shall endeavor to provide similar appropriate commercial space in properties to be constructed by it along Tremont Street.

>C. (See last agreement)

IN WITNESS WHEREOF, The Boston Redevelopment Authority and the Tufts-New England Medical Center have caused this agreement to be duly executed as of the day and year first above written.

BOSTON REDEVELOPMENT AUTHORITY

Signed, sealed and delivered
in the presence of:

Helen Crowley

Edward J. Logue
Development Administrator

TUFTS-NEW ENGLAND MEDICAL CENTER

By Nils G. Wessell
Chairman Adm. Bd

SUPPLEMENT NO. 1

TO A COOPERATION AGREEMENT

BY AND BETWEEN

BOSTON REDEVELOPMENT AUTHORITY

AND

TUFTS-NEW ENGLAND MEDICAL CENTER

THIS AGREEMENT entered into as of this 20th day of December, 1968, by and between the BOSTON REDEVELOPMENT AUTHORITY, a public body politic and corporate, organized under Chapter 121 of the Massachusetts General Laws (Ter. Ed.), as amended, hereinafter referre to as the "Authority", and the TUFTS-NEW ENGLAND MEDICAL CENTER, an alliance pursuant to Chapter 40 of the Massachusetts Acts of 1930, as amended, of New England Medical Center Hospitals and Trustees of Tufts College, two charitable corporations organized under the laws of Massachusetts, said corporations acting jointly through said alliance and individually, hereinafter referred to as the "Medical Center".

W I T N E S S E T H T H A T:

WHEREAS the Authority and the Medical Center entered into a Cooperation Agreement dated January 17, 1966, respecting, among other things, the disposition of land in the South Cove Urban Renewal Area and the property to be held by the Medical Center in tax paying status in said area;

WHEREAS, the Medical Center has further investigated the question of whether to build married students housing in the South Cove Urban Renewal Area and desires to clarify its understanding of the tax status of any such housing which might be built;

WHEREAS, the Medical Center has further explored the amount of commercial space to be built by it in the South Cove Urban Renewal Area, and desires to clarify its understanding of the tax status of such commercial space;

WHEREAS, the Medical Center and the City have discussed the future use to be made of the Center's facilities by professionals, and each desires to clarify the terms of such future use;

WHEREAS, the Medical Center desires to aid the City in meeting the medical needs of some of those persons in the South Cove Urban Renewal Area whose needs might otherwise go unmet,

NOW, THEREFORE, the parties hereto mutually agree that there shall be added to the Cooperation Agreement a new subsection C of Section X and three new sections numbered XI, XII and XIII, as follows:

(.) C. The Medical Center agrees that at least 40,000 to 50,000 square feet of floor area in buildings to be constructed by the Medical Center will be devoted to commercial use and be subject to full and fair assessment by the City of Boston.

Married Students' Housing. If the Medical Center constructs married students' housing in the South Cove Urban Renewal Area, then unless and until the taxability of married students' housing shall have been determined by the legislature or the courts or a different formula for its taxation shall have been established generally

by the City of Boston (in which event such determination or new formula would control), the Medical Center agrees to pay as, or in lieu of, real estate taxes to the City of Boston, an amount based on the following:

A. Fifty percent (50%) of all such married students' housing shall be tax exempt.

B. The remaining fifty percent (50%) of such married students' housing shall be assessed as is other residential property in the City.

XII. Professional Use. The Medical Center agrees that any portions of the facility used by doctors or dentists as offices for private practice for their own account (as distinguished from services rendered as full-time salaried staff members) will be subject to full and fair assessment by the City of Boston.

XIII. Neighborhood Medical Care. The Medical Center agrees to provide a medical service plan by which all students of the new Quincy School as presently planned for approximately 800 students will have available free physical examinations, screening and first aid (at a cost to the Medical Center not exceeding $60,000 a year), with referral of those requiring further diagnosis or treatment to family physicians or others as the circumstances may require; and further, that if other

treatment facilities are not available to such students and their families, treatment will be provided by the Medical Center to the extent that reimbursement can be procured from such sources as special grants, insurance, Medicare, Medicaid and the like, and to the extent it is not so available the Medical Center will give them special consideration for care, free or at reduced rates, consistent with its obligations to others.

IN WITNESS WHEREOF, the Authority and Medical Center have executed this Agreement as of the date first written.

ATTEST: BOSTON REDEVELOPMENT AUTHORITY

By Development Administrator

ATTEST: TUFTS-NEW ENGLAND MEDICAL CENTER

By Chairman, Administrative Board

APPENDIX 3: Analysis of Research Space

EXISTING LAB SPACE AT NEMC
(n.u.s.f.)

	Existing	To Become Available	
Ziskind:			
B	3,537	395	As of 9/82
1	0	0	
M	0	0	
2	2,572	3,123	As of 9/8 & 4/84
3	4,817	0	
4	1,982	3,499	As of 9/82
5	696	0	
6	3,370	0	
7	6,165	0	
	23,139	7,017	
Boston Dispensary:			
4	1,100	2,500	As of 9/82
3	0	5,000	As of 9/82
2	0	2,400	As of 9/82
	1,100	9,900	
Cooper:			
	2,700	0	
	2,700	0	
Proger:			
	379	0	
	379	0	
Rehabilitation Institute:			
4	5,000	0	
	5,000	0	
TOTAL	32,318*	16,917	

*Does not include 7,852 n.u.s.f. in Biewend which will be no longer available for research.

EXISTING USE OF SPACE AT TUFTS**

South Cove Building (Net Useable Square Feet)

	LAB.	EDUC.	ADMIN.	LIBE.	COM.	CLIN.	SERV.	TOTAL
B	2,968	-	-	-	-	-	1,556	4,524
1	-	-	2,986*	-	-	-	1,329	4,315
2	-	3,175*	-	-	-	-	1,461	4,636
3	2,920	-	-	-	-	-	1,614	4,534
4	3,088	-	-	-	-	-	1,330	4,418
5	2,768	-	-	-	-	-	1,489	4,257
6	3,006	-	-	-	-	-	1,447	4,453
7	2,934	-	-	-	-	-	1,343	4,277
8	3,263	-	-	-	-	-	1,252	4,515
	20,947	3,175	2,986	-	-	-	12,821	39,929

Total net useable square feet	25,108
Assumed building gross square feet	45,360
Total to become available for research	6,161

* Will become available for research purposes.
**Based upon data provided by Tufts. This data is in the process of being revised and retabulated.

EXISTING USE OF SPACE AT TUFTS**

M&V Building (Net Useable Square Feet)

	LAB.	EDUC.	ADMIN.	LIBE.	COM.	CLIN.	SERV.	TOTAL
B.	-	8,778	-	-	-	-	4,244	13,022
1.	-	1,411*	-	8,691*	-	-	4,088	14,190
2.	3,454	2,354*	-	2,671*	-	-	4,226	12,705
3.	9,518	-	-	-	-	-	3,465	12,983
4.	10,359	-	-	-	-	-	2,459	12,818
5.	9,570	-	-	-	-	-	3,206	12,776
6.	10,246	-	-	-	-	-	2,939	13,185
7.	10,775	-	-	-	-	-	3,100	13,875
8.	9,826	-	-	-	-	-	3,187	13,013
	63,748	12,543	-	11,362	-	-	30,914	118,567

Total net useable square feet	87,653
Assumed building gross square feet	126,000
Total to become available for research	15,127

* Will become available for research purposes.
**Based upon data provided by Tufts. This data is in the process of being revised and retabulated.

EXISTING USE OF SPACE AT TUFTS**

Stearns Building (Net Useable Square Feet)

	LAB.	EDUC.	ADMIN.	LIBE.	COM.	CLIN.	SERV.	TOTAL
B.	-	-	-	-	-	-	6,107	6,107
1.	-	3,928*	-	-	-	-	1,738	5,666
2.	-	3,788*	-	-	-	-	1,991	5,779
3.	-	3,771*	-	-	-	-	2,129	5,900
4.	3,960	-	-	-	-	-	1,602	5,562
5.	4,758	-	-	-	-	-	1,196	5,954
6.	4,520	-	-	-	-	-	1,194	5,714
7.	4,481	-	-	-	-	-	1,135	5,616
8.	4,182	-	-	-	-	-	1,820	6,002
	21,901	11,487	-	-	-	-	18,912	52,300

Total net useable square feet	33,388
Assumed building gross square feet	54,000
Total to become available for research	11,487

* Will become available for research purposes.
**Based upon data provided by Tufts. This data is in the process of being revised and retabulated.

EXISTING USE OF SPACE AT TUFTS**

Arnold Building (Net Useable Square Feet)

	LAB.	EDUC.	ADMIN.	LIBE.	COM.	CLIN.	SERV.	TOTAL
.	-	-	-	760*	-	-	5,244	6,004
1.	-	-	-	4,456***	-	-	1,218	5,674
2.	-	3,630	-	-	-	-	2,108	5,738
3.	4,800	-	-	-	-	-	1,564	6,364
4.	-	-	3,529*	-	-	-	1,431	4,960
5.	4,175	-	-	-	-	-	1,365	5,540
6.	3,455	-	-	-	-	-	1,975	5,430
7.	4,150	-	-	-	-	-	1,450	5,600
8.	-	3,347*	-	-	-	-	2,207	5,554
	16,580	6,977	3,529	5,216	-	-	18,562	50,864

Total net useable square feet	32,302
Assumed building gross square feet	54,000
Total to become available for research	10,285

* Will become available for research purposes.
** Based upon data provided by Tufts. This data is in the process of being revised and retabulated.
***A portion (2,649) will become available.

POTENTIAL FOR NEW CONSTRUCTION AT VARIOUS SITES

	SITE AREA	GROSS BLDG AREA	NET RENTABLE	NET USEABLE	RESEARCH N-RENTABLE	RESEARCH N-USEABLE
1. HSEB/RECTORY	26,031	FAR 8.0 208,248	71% 148,719	126,411	49,401	41,991[3]
2. INFILL	7,998[2]	FAR 8.37 66,955	48,641	37,085	48,641	37,085
3. POSNER	26,591	FAR 8.0 212,728	170,182	144,653	170,182	144,655
4. DENTAL	18,898	7 Floors 140,000	25%[1] 119,000	68% 95,200	119,000	95,200
5. PARKING LOT	42,972	FAR 8.0 343,776	80% 275,020	68% 233,768	275,020	233,768
6. ZISKIND	11,859	4 Floors 47,436	80% 37,948	68% 32,256	37,948	32,256

1.) 6-/12 Floors Lab - 1/2 Floor Mechanical.
2.) City Maps give 7,214 SF.
3.) (148,719 - 99,318) =49,401.

NET TO GROSS RATIOS IN EXISTING RESEARCH FACILITIES

M&V Building:

	NUSF	NRSF	NUSF/NRSF	GROSS	NRSF/GSF
B.	8,778	9,792	-	-	-
1	10,102	10,968	-	-	-
2	8,479	9,933	-	-	-
3	9,518	11,472	-	-	-
4	10,359	11,481	-	-	-
5	9,570	11,203	-	-	-
6	10,246	11,744	-	-	-
7	10,775	12,354	-	-	-
8	9,826	11,648	-	-	-
	87,653	100,595	87.1%	126,000	79.8%

Stearns Building:

	NUSF	NRSF	NUSF/NRSF	GROSS	NRSF/GSF
B.	0	0	-	-	-
1	3,928	4,548	-	-	-
2	3,788	4,664	-	-	-
3	3,771	4,582	-	-	-
4	3,960	4,999	-	-	-
5	4,758	5,466	-	-	-
6	4,520	5,242	-	-	-
7	4,481	5,167	-	-	-
8	4,182	5,362	-	-	-
	33,388	40,030	83.4%	54,000	74.1%

Arnold Building:

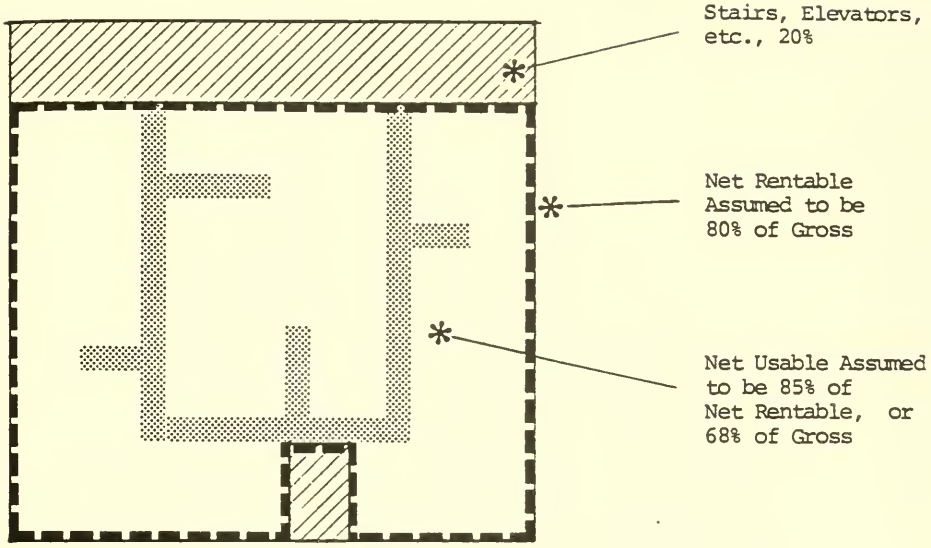
	NUSF	NRSF	NUSF/NRSF	GROSS	NRSF/GSF
B.	760	760	-	-	-
1	4,456	4,511	-	-	-
2	3,630	4,288	-	-	-
3	4,800	5,818	-	-	-
4	3,529	4,378	-	-	-
5	4,175	4,661	-	-	-
6	3,455	4,613	-	-	-
7	4,150	4,730	-	-	-
8	3,347	4,445	-	-	-
	32,302	38,204	84.5%	54,000	70.7%

NET TO GROSS RATIOS IN EXISTING RESEARCH FACILITIES

South Cove Building:

	NUSF	NRSF	NUSF/NRSF	GROSS	NRSF/GSF
B.	2,968	3,078	-	-	-
1	2,986	3,260	-	-	-
2	3,175	3,615	-	-	-
3	2,920	3,756	-	-	-
4	3,088	3,766	-	-	-
5	2,768	3,368	-	-	-
6	3,006	3,636	-	-	-
7	2,934	3,571	-	-	-
8	3,263	3,929	-	-	-
	27,108	31,979	84.7%	45,360	70.5%

Diagram of Assumed Net to Gross Ratios



Hypothetical Floor of 10,000
Gross Square Feet

Net rentable and net usable ratios have been established on the basis of current experience in M+D, Stearns, Arnold and South Cove Buildings.

The study by Payette Associates, Inc. of September 1980 found that 1510 net usable square feet were required for each Principal Investigator. This would provide work space for 9 people plus a prorata share of controlled temperature rooms, storage, glass washing, etc.

APPENDIX 4

NEW ENGLAND MEDICAL CENTER HOSPITAL BUILDING EVALUATION CRITERIA

HANS H. FINNE INC. Architects/Planners/Health Facilities Consultants

65 East India Row, Suite 15f
Boston, Massachusetts 02110

Hans H. Finne, Inc., has been charged with the task of developing a masterplan for the New England Medical Center Hospital. An integral part of the masterplan process is the evaluation of the existing, physical aspects of seventeen buildings currently occupied (totally or partially) by the New England Medical Center Hospital. This evaluation was executed by HFI with the full cooperation of the architectural, engineering, and physical plant staffs of NEMCH.

The intent of this evaluation was to objectively record the visual condition of each building, record the current quality of the mechanical, structural, and life safety systems of each building, and rate each building based upon specific criteria established by HFI and NEMCH. This rating was initially done independently by HFI and NEMCH. These independent ratings were then discussed by all the evaluation participants with the final rating shown in this document.

It should be fully understood that this evaluation addresses only the existing, physical aspects of the buildings and is not intended to make any judgement as to the functional advantages or disadvantages of each building as it is currently being occupied. Furthermore, each building would have to be investigated in more specific detail - mechanically, structurally, functionally, and compliance with applicable codes - if a major renovation project was to be contemplated for any of the seventeen buildings.

NEW ENGLAND MEDICAL CENTER HOSPITAL
BUILDING EVALUATION CRITERIA

NAME OF BUILDING BIEWEND BUILDING
YEAR BUILT 1924 NO. OF FLOORS 4+BASEMENT G.S.F. 145,000

EXTERIOR

TYPE OF MATERIAL	COLOR OF MATERIAL	WINDOWS			
		OPERABLE OR NONOPERABLE		TYPE OF SASH MATERIAL	CONDITION OF LINTELS
BRICK STONE CAST CONC.	BUFF	NORTH ELEV	OPER	WOOD	NEW
		SOUTH ELEV	OPER	WOOD	NEW
		EAST ELEV	OPER	WOOD	NEW
		WEST ELEV	OPER	WOOD	NEW

GENERAL PHYSICAL CONDITION OF THE EXTERIOR
ALL LINTELS ARE BEING REPLACED — REPLACEMENT TO BE COMPLETED FALL 1980

INTERIOR

HEIGHT FROM FL. TO FL.	HEIGHT FROM FLOOR TO UNDERSIDE OF STRUCTURE	EXISTING FINISH		
		CEILINGS	WALLS	FLOORS
GENERALLY 10'-6"		CEILING TILE	PLASTER G.W.B.	TILE CARPET

GENERAL PHYSICAL CONDITION OF THE INTERIOR
RENOVATED AREAS GENERALLY GOOD SHAPE
TOTAL RENOVATION FOR BAYCOVE DAY CENTER — 2ND FLOOR

DATE 11-14-80

HANS H. FINNE INC.
65 E. INDIA ROW SUITE 15F BOSTON MASS. 02110

NEW ENGLAND MEDICAL CENTER HOSPITAL
BUILDING EVALUATION CRITERIA

NAME OF BUILDING BIEWEND BUILDING
YEAR BUILT 1924 NO. OF FLOORS 14+BASEMENT G.S.F. 145,000

STRUCTURE	
EXISTING STRUCTURAL SYSTEM	UNIQUE CHARACTERISTICS
FIRE-PROOF, STEEL-FRAME REINFORCED CONC. SLAB	

COMMENTS
COLUMNS OF SIZE TO SUPPORT CONNECTOR FROM BIEWEND BUILDING TO 1B BUILDING

ELECTRIC	
EXISTING ELECTRICAL SERVICE	UNIQUE CHARACTERISTICS
3000A-3φ-60~-5WIRE-120/208 BUS DUCT DISTRIBUTION SYSTEM 2000A-3φ-60~-5WIRE-120/208	2000AMP-CABLE DISTRIBUTION SYSTEM 3000AMP-BUS DUCT (COPPER)

COMMENTS
BUS DUCT FOR HEAVY EQUIP-CABLE FOR LIGHTS & OUTLETS
NO EMERGENCY POWER EXISTING AT THIS TIME

HEATING, AIR CONDITIONING, VENTILATION			
TYPE OF COOLING SYSTEM	TYPE OF HEATING SYSTEM	TYPE OF COMBINED SYSTEM	VENTILATION SYSTEM
1. WINDOW A/C 2. PACKAGED AIR COOLED A/C 3. PACKAGED H_2O COOLED A/C	2 PIPE STEAM W/CAST IRON RADIATION		1. OPER. WINDOWS 2. MECH. VENT.

COMMENTS
SYSTEMS GENERALLY GOOD-MECH. VENTILATION W/PACKAGED AIR COOLED A/C UNITS

DATE 11-14-80

HANS H. FINNE INC.
65 E. INDIA ROW SUITE 15F BOSTON MASS 02110

NEW ENGLAND MEDICAL CENTER HOSPITAL
BUILDING EVALUATION CRITERIA

NAME OF BUILDING BIENVENU BUILDING
YEAR BUILT 1924 NO. OF FLOORS 14+ BASEMENT G.S.F. 145,000

PLUMBING

WATER PIPE MATERIAL	WASTE PIPE MATERIAL	VENT PIPE MATERIAL	AVAILIABILITY OF MED. GASES
COPPER BRASS	CAST IRON GALV. STEEL	CAST IRON GALV. STEEL	NONE EXISTING

COMMENTS
EXISTING PIPING SYSTEMS SHOULD BE UPGRADED

FIRE PROTECTION

ALARM CONNECT'D TO FIRE DEPT.	EMERGENCY LIGHTING	SPRINKLER SYSTEM	CORRIDOR FIRE HOSE	INDIVIDUAL FIRE EXTING'HERS
IN PROCESS	1. BATTERY 2. HARD WIRED LIGHTS	NO- STANDPIPE IN STAIR	NO- STANDPIPE IN STAIR	YES

COMMENTS
NO SMOKE CONTROL SYSTEM - BUILDING NEEDS FIRE PUMP TO PROVIDE ADEQUATE SYSTEM PRESSURE - STANDPIPE IS AVAILABLE FOR SPRINKLER & CORRIDOR FIRE HOSE

ELEVATORS

IS THERE EXISTING ELEVATOR SERVICE	IS EXISTING ELEVATOR SERVICE ADAPTABLE FOR PATIENT STRETCHERS, CARTS, ETC.
YES	NO

DATE 11-14-80

HANS H. FINNE INC.
65 E. INDIA ROW SUITE 15F BOSTON MASS 02110

NEW ENGLAND MEDICAL CENTER HOSPITAL
BUILDING EVALUATION CRITERIA

NAME OF BUILDING BIEKIND BUILDING
YEAR BUILT 1924 NO. OF FLOORS 14+BASEMENT G.S.F. 145,000

SPECIAL CONSIDERATIONS

ARE THERE ANY SPECIAL CONSIDERATIONS SUCH AS EXIT STAIR LOCATIONS, CORRIDOR WIDTHS, DOOR WIDTHS, ETC. WHICH WOULD AFFECT ANY POTENTIAL RENOVATION AND REUSE OF THE BUILDING?

EXIT STAIR ON EAST WALL NEEDS UPGRADING AT 3RD FLOOR TO GROUND LEVELS
EXISTING ELEVATORS NOT LARGE ENOUGH TO ACCOMODATE PATIENT STRETCHERS

CODE CONFORMANCE

DOES THE BUILDING, AS PRESENTLY OCCUPIED, CONFORM TO APPLICIABLE CODES? WHAT ASPECTS OF BUILDING ARE NONCONFORMING?

DATE 11-14-80

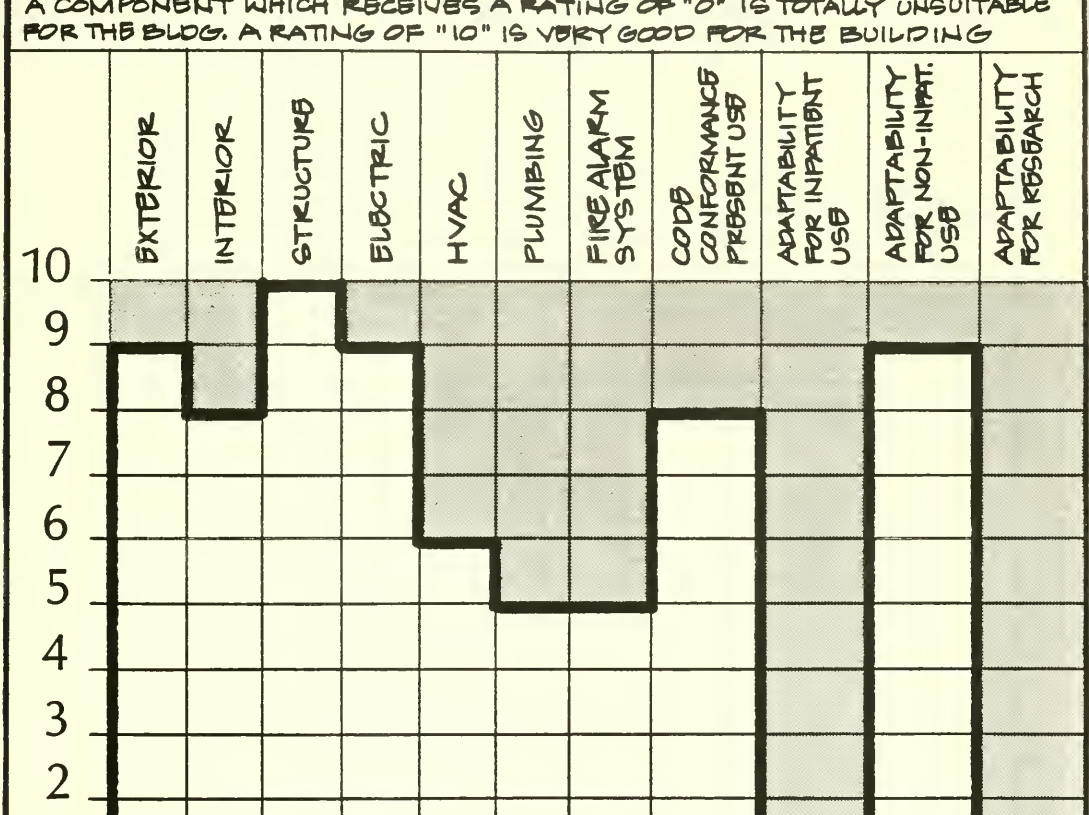
HANS. H. FINNE INC.
66 E. INDIA ROW SUITE 15F BOSTON MASS. 02110

NEW ENGLAND MEDICAL CENTER HOSPITAL
BUILDING EVALUATION CRITERIA

NAME OF BUILDING BIEWEND BUILDING
YEAR BUILT 1924 NO. OF FLOORS 14+ BASEMENT G.S.F. 145,000

GROSS PHYSICAL BUILDING EVALUATION

RATE THE FOLLOWING COMPONENTS AS THEY EXIST IN THE BUILDING. THIS RATING IS A SLIDING SCALE FROM "0" TO "10" AND IS BASED ON CURRENT OCCUPANCY PLUS THE CONDITION OR EFFICIENCY OF THE COMPONENT. A COMPONENT WHICH RECEIVES A RATING OF "0" IS TOTALLY UNSUITABLE FOR THE BLDG. A RATING OF "10" IS VERY GOOD FOR THE BUILDING



DATE 11-14-80

HANS H. FINNE INC.
65 E. INDIA ROW SUITE 15F BOSTON MASS 02110

NEW ENGLAND MEDICAL CENTER HOSPITAL
BUILDING EVALUATION CRITERIA

NAME OF BUILDING BOSTON FLOATING HOSPITAL
YEAR BUILT 1930 NO. OF FLOORS 4+BASEMENT G.S.F. 24,504

EXTERIOR

TYPE OF MATERIAL	COLOR OF MATERIAL	WINDOWS			
		OPERABLE OR NONOPERABLE		TYPE OF SASH MATERIAL	CONDITION OF LINTELS
BRICK CONCRETE LINTELS	RED	NORTH ELEV	OPER	WD/METAL	GOOD
		SOUTH ELEV	OPER	WD/METAL	GOOD
		EAST ELEV	OPER	WD/METAL	GOOD
		WEST ELEV	OPER	WD/METAL	GOOD

GENERAL PHYSICAL CONDITION OF THE EXTERIOR

INTERIOR

HEIGHT FROM FL. TO FL.	HEIGHT FROM FLOOR TO UNDERSIDE OF STRUCTURE	EXISTING FINISH		
		CEILINGS	WALLS	FLOORS
VARIES FROM 11'-2" TO 13'-0"		CEILING TILE PLASTER	PLASTER G.W.B.	TILE CARPET

GENERAL PHYSICAL CONDITION OF THE INTERIOR

DATE 11-14-80

HANS H. FINNE INC.
65 E. INDIA ROW SUITE 15F BOSTON MASS. 02110

NEW ENGLAND MEDICAL CENTER HOSPITAL
BUILDING EVALUATION CRITERIA

NAME OF BUILDING BOSTON FLOATING HOSPITAL
YEAR BUILT 1930 NO. OF FLOORS 4+BASEMENT G.S.F. 24,504

STRUCTURE

EXISTING STRUCTURAL SYSTEM	UNIQUE CHARACTERISTICS
REINFORCED CONCRETE	

COMMENTS

ELECTRIC

EXISTING ELECTRICAL SERVICE	UNIQUE CHARACTERISTICS
225A-3φ-60∿-4WIRE-120/208 3 SERVICES FOR THE FOLLOWING: 400A-3φ-60∿-4WIRE-120/208	THE 225 AMP SERVICE IS FOR THE CATH LAB ONLY

COMMENTS
400 AMP – 120 VOLT AUTOMATIC EMERGENCY POWER

HEATING, AIR CONDITIONING, VENTILATION

TYPE OF COOLING SYSTEM	TYPE OF HEATING SYSTEM	TYPE OF COMBINED SYSTEM	VENTILATION SYSTEM
1. WINDOW A/C 2. THRU WALL A/C UNITS	1. 2 PIPE STEAM W/CAST IRON RADIATION 2. STEAM COILS IN THRU WALL UNITS		MECH. EXHAUST IN MANY AREAS

COMMENTS
BUILDING NEEDS UPGRADED, PLANNED VENTILATION AND A/C SYSTEM

DATE 11-14-80

HANS H. FINNE INC.
65 E. INDIA ROW SUITE 15F BOSTON MASS 02110

NEW ENGLAND MEDICAL CENTER HOSPITAL
BUILDING EVALUATION CRITERIA

NAME OF BUILDING BOSTON FLOATING HOSPITAL
YEAR BUILT 1930 NO. OF FLOORS 4+ BASEMENT G.S.F. 24,504

PLUMBING

WATER PIPE MATERIAL	WASTE PIPE MATERIAL	VENT PIPE MATERIAL	AVAILIABILITY OF MED. GASES
COPPER	CAST IRON GALV. STEEL	CAST IRON GALV. STEEL	YES

COMMENTS
H2O LINES IN GOOD SHAPE
SANITARY PIPING NEEDS 50% UPGRADING

FIRE PROTECTION

ALARM CONNECT'D TO FIRE DEPT.	EMERGENCY LIGHTING	SPRINKLER SYSTEM	CORRIDOR FIRE HOSE	INDIVIDUAL FIRE EXTING'HERS
YES	YES	BASEMENT ONLY	YES	YES

COMMENTS
CLASS "B" FIRE ALARM
NO SMOKE DETECTORS IN PATIENT ROOMS EXCEPT 15FH 5 (CENTER 4)

ELEVATORS

IS THERE EXISTING ELEVATOR SERVICE	IS EXISTING ELEVATOR SERVICE ADAPTABLE FOR PATIENT STRETCHERS, CARTS, ETC.
YES	YES

DATE 11-14-80

HANS H. FINNE INC.
65 E. INDIA ROW SUITE 15F BOSTON MASS 02110

NEW ENGLAND MEDICAL CENTER HOSPITAL
BUILDING EVALUATION CRITERIA

NAME OF BUILDING BOSTON FLOATING HOSPITAL
YEAR BUILT 1930 NO. OF FLOORS 4+ BASEMENT G.S.F. 24,504

SPECIAL CONSIDERATIONS

ARE THERE ANY SPECIAL CONSIDERATIONS SUCH AS EXIT STAIR LOCATIONS, CORRIDOR WIDTHS, DOOR WIDTHS, ETC. WHICH WOULD AFFECT ANY POTENTIAL RENOVATION AND REUSE OF THE BUILDING?

CODE CONFORMANCE

DOES THE BUILDING, AS PRESENTLY OCCUPIED, CONFORM TO APPLICIABLE CODES? WHAT ASPECTS OF BUILDING ARE NONCONFORMING?

ABILITY TO SATISFY I.C.U. AND PATIENT ROOM VENTILATION REQUIREMENTS IS MARGINAL

DATE 11-14-80

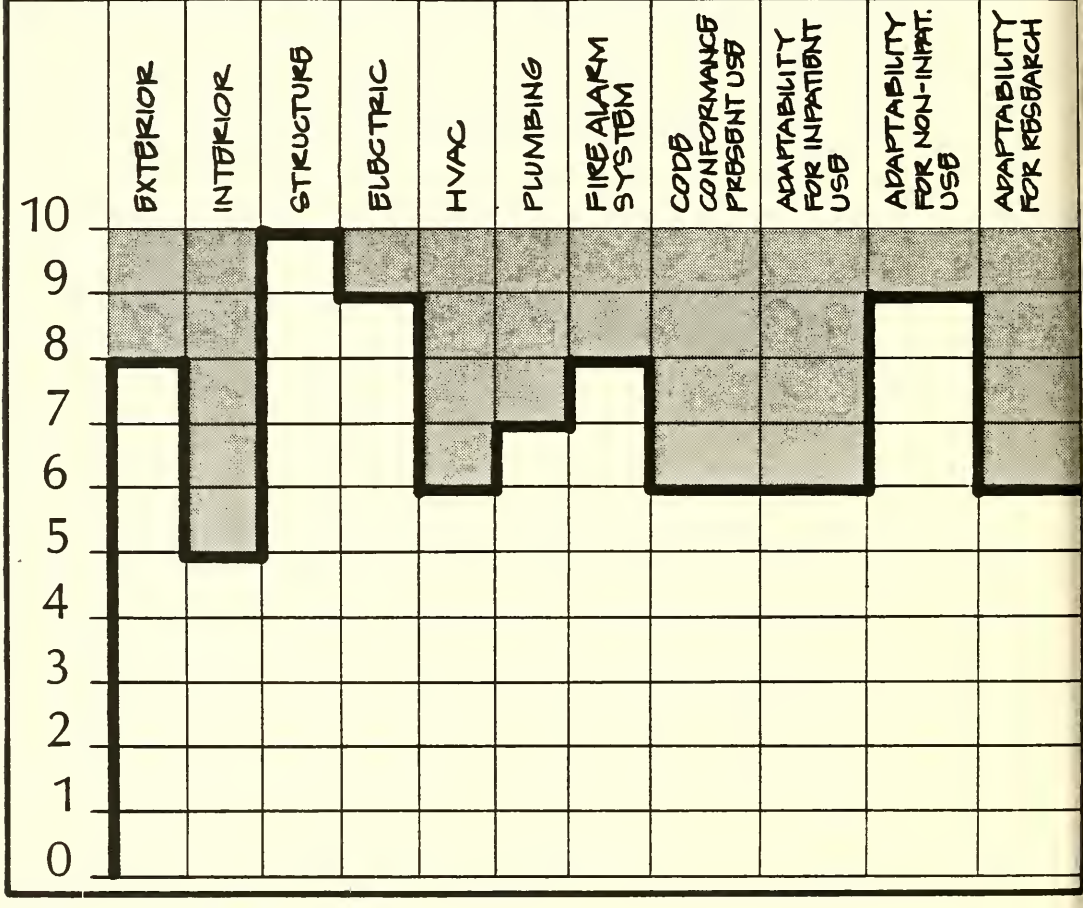
HANS. H. FINNE INC.
65 B. INDIA ROW SUITE 15 F BOSTON MASS. 02110

NEW ENGLAND MEDICAL CENTER HOSPITAL
BUILDING EVALUATION CRITERIA

NAME OF BUILDING BOSTON FLOATING HOSPITAL
YEAR BUILT 1930 NO. OF FLOORS 4+ BASEMENT G.S.F. 24,504

GROSS PHYSICAL BUILDING EVALUATION

RATE THE FOLLOWING COMPONENTS AS THEY EXIST IN THE BUILDING. THIS RATING IS A SLIDING SCALE FROM "0" TO "10" AND IS BASED ON CURRENT OCCUPANCY PLUS THE CONDITION OR EFFICIENCY OF THE COMPONENT. A COMPONENT WHICH RECEIVES A RATING OF "0" IS TOTALLY UNSUITABLE FOR THE BLDG. A RATING OF "10" IS VERY GOOD FOR THE BUILDING



DATE 11-14-80

HANS H. FINNE INC.
65 E. INDIA ROW SUITE 15F BOSTON MASS 02110

APPENDIX 5

NEW ENGLAND MEDICAL CENTER HOSPITAL
PRATT/FARNSWORTH BUILDINGS

NURSING UNITS RENOVATION STUDY

HANS H. FINNE INC. Architects/Planners/Health Facilities Consultants

65 East India Row, Suite 15f
Boston, Massachusetts 02110

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RENOVATION STUDY NARRATIVE
EXHIBIT A
EXHIBITS B and C
EXHIBITS D and E
EXHIBITS F and G

NEW ENGLAND MEDICAL CENTER HOSPITAL
PRATT/FARNSWORTH BUILDINGS

NURSING UNITS RENOVATION STUDY

This study deals with the Adult Nursing Units located in the Pratt/Farnsworth Buildings. At the completion of the new 1B Building, the pediatric nursing units will move from their existing locations into the new building. Adult nursing units, now located in various buildings and functioning despite difficencies, also require a solution for improvement.

The feasibility of renovating the existing adult nursing units to meet NEMCH criteria is analyzed through the following points:

1. Physical evaluation.
2. Functional evaluation.
3. Development of a space program and space analysis for a typical nursing unit.
4. Testing of nursing unit design solutions within the constraints of the existing buildings.
5. Analysis of study layouts.

1. Physical Evaluation

In order to determine the strengths and weaknesses of the physical plant, HFI and the NEMCH architectural, engineering, and physical plant personnel made a thorough physical evaluation of the Pratt/Farnsworth Buildings (Exhibit A). These buildings have been rated above average. However, major renovation for nursing units will require total replacement of major mechanical systems.

2. Functional Evaluation

For a typical existing nursing unit floor (Exhibit B), the following major problems exist (Exhibit C):

A. Many patient bedrooms have no toilets directly accessable from the bedrooms.
B. The clean and soiled utility functions are carried out in the same room. Limited work is now being done to improve this situation to the extent possible without major renovation.
C. The size of the patient bedrooms do not meet current standards. Modern standards for patient bedrooms are 200 square feet for a semi-private and 120 square feet for a private room, excluding wardrobes, toilets and vestibules. Existing space listings include the wardrobes, vestibules, and toilets.

NURSING UNITS RENOVATION STUDY

D. The core facilities supporting the nursing units are grossly undersized and hamper their functional operation.
E. The distances from the nursing stations to the farthest patient bedrooms are excessive in many nursing units. Normal standards for an average level of nursing care are 80'-0" to 90'-0". Since NEMCH is dealing with a higher level of nursing care, a distance of 50'-0" to 60'-0" is desireable.
F. Due to the placement and configuration of the buildings, conflicting visitor, staff, and support traffic occurs in the nursing units. This is unacceptable for critical nursing care.

3. Development of a Space Program and Space Analysis for a Typical Nursing Unit.

With the input of NEMCH nursing administration, space programs were established as guides for renovation schemes (Exhibit D). The space programs developed were for a typical 27 bed nursing unit and a typical 8 bed special care unit. These space programs were the input for a space analysis between existing 25-27 bed nursing units' net square footage and NEMCH recommended 27 bed net square footage (Exhibit E). Core spaces were also examined. A size comparison between recommended core facilities and existing core facilities clearly indicates that the existing core facilities are inadequate.

4. Testing of Nursing Unit Design Solutions within the Constraints of the Existing Buildings.

With the previous established planning criteria and the development of the space programs for the nursing units, two design solutions were prepared. Exhibit F, shows a study of the renovation of the 6th floor Farnsworth Building. The layout developed meets the space program requirement for core facilities and all the patient bedrooms have direct access to toilet facilities. However, there is an excessive distance from the nursing station to the farthest patient bedroom of approximately 130'-0".

Exhibit G, shows a study which implements all the design criteria as illustrated in Exhibit D. This study shows that locating the nurses station within a range of 50'-0" - 60'-0" of the patient bedrooms results in extremely small and unacceptable nursing units, with only 16 beds.

NURSING UNITS RENOVATION STUDY

5. Analysis of the Study Layouts.

The study layouts do not meet all the developed criteria for the adult nursing units. A 130'-0" travel distance to patient rooms would compromise the level of nursing care. An acceptable travel distance creates an undersized unit which would be uneconomical to operate. Existing conditions create conflicting traffic patterns which cannot be eliminated. Because the layouts indicate no solution available within the confines of the existing buildings, the physical aspects of renovating have not been fully explored. Should a compromise solution be accepted, the following items should be considered:

1. Capital cost involved.
2. Result of final product.
3. Keeping the building in operation during construction time.
4. Contractor accessability to the buildings.
5. Length of construction time (escalation cost).

If total renovation is not justified, could a less dynamic and costly solution improve the nursing units? Renovating existing bedrooms into core facilities would result in a reduction in size of the nursing units. Lost beds could be replaced with additional nursing units constructed on the second floor of the Pratt/Farnsworth Buildings after radiology is relocated into the 1B Building. However, the renovation of this floor would be very costly and to add toilets for patient bedrooms would require work on other floors as well. If we carefully evaluate the modest improvements gained on the nursing floors, we may conclude that it is not worth the effort, disturbance of operation, and money to do so.

The Pratt/Farnsworth Buildings are not suitable for renovation for improved adult nursing units meeting NEMCH criteria. It is recommended that a program of routine maintenance and redecoration be continued.

EXHIBIT A
BUILDING EVALUATION CRITERIA
PRATT BUILDING
FARNSWORTH BUILDING

NEW ENGLAND MEDICAL CENTER HOSPITAL
BUILDING EVALUATION CRITERIA

NAME OF BUILDING PRATT BUILDING
YEAR BUILT 1938 NO. OF FLOORS 6+BASEMENT G.S.F. 51,766

EXTERIOR

TYPE OF MATERIAL	COLOR OF MATERIAL	WINDOWS			
		OPERABLE OR NONOPERABLE		TYPE OF SASH MATERIAL	CONDITION OF LINTELS
BRICK	RED	NORTH ELEV	OPER	WOOD	GOOD
LIMESTONE TRIM		SOUTH ELEV	OPER	WOOD	GOOD
		EAST ELEV	OPER	WOOD	GOOD
		WEST ELEV	OPER	WOOD	GOOD

GENERAL PHYSICAL CONDITION OF THE EXTERIOR

INTERIOR

HEIGHT FROM FL. TO FL.	HEIGHT FROM FLOOR TO UNDERSIDE OF STRUCTURE	EXISTING FINISH		
		CEILINGS	WALLS	FLOORS
GENERALLY 12'-4"		CEILING TILE	PLASTER G.W.B.	TILE CARPET RUBBER TILE - UNRATED

GENERAL PHYSICAL CONDITION OF THE INTERIOR

DATE 11-14-80

HANS H. FINNE INC.
65 E. INDIA ROW SUITE 15F BOSTON MASS. 02110

NEW ENGLAND MEDICAL CENTER HOSPITAL
BUILDING EVALUATION CRITERIA

NAME OF BUILDING PRATT BUILDING
YEAR BUILT 1938 NO. OF FLOORS 6+BASEMENT G.S.F. 51,766

STRUCTURE	
EXISTING STRUCTURAL SYSTEM	UNIQUE CHARACTERISTICS
FIRE-PROOFED, STEEL-FRAME REINFORCED CONC. SLAB	3 HOUR FIRE RATING
COMMENTS	

ELECTRIC	
EXISTING ELECTRICAL SERVICE	UNIQUE CHARACTERISTICS
4000A-3φ-60∿-4WIRE-120/208 VOLTS	COPPER RISERS WITH CAPACITY OF 6000 AMPS
COMMENTS ELECTRIC SERVICE FOR BOTH PRATT & FARNSWORTH 1200 AMP-3φ AUTOMATIC EMERGENCY POWER	

HEATING, AIR CONDITIONING, VENTILATION			
TYPE OF COOLING SYSTEM	TYPE OF HEATING SYSTEM	TYPE OF COMBINED SYSTEM	VENTILATION SYSTEM
1. THRU WALL UNITS 2. WINDOW A/C	1. 2 PIPE STEAM RADIATION 2. STEAM COILS IN THRU WALL UNITS	COMBINED HEAT & COOL WITH THRU WALL UNITS	THRU WALL UNITS
COMMENTS FUTURE MAJOR RENOVATION — CAPABILITY FOR GENERAL DUCT SYSTEM VENTILATION DOES EXIST			

DATE 11-14-80

HANS H. FINNE INC.
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NEW ENGLAND MEDICAL CENTER HOSPITAL
BUILDING EVALUATION CRITERIA

NAME OF BUILDING PRATT BUILDING
YEAR BUILT 1938 NO. OF FLOORS 6+BASEMENT G.S.F. 51,766

PLUMBING			
WATER PIPE MATERIAL	WASTE PIPE MATERIAL	VENT PIPE MATERIAL	AVAILIABILITY OF MED. GASES
BRASS. COPPER	CAST IRON	CAST IRON GALV. STEEL	VACUUM OXYGEN AIR

COMMENTS
FUTURE MAJOR RENOVATION - PLUMBING SYSTEMS WILL NEED UPGRADING

FIRE PROTECTION				
ALARM CONNECT'D TO FIRE DEPT.	EMERGENCY LIGHTING	SPRINKLER SYSTEM	CORRIDOR FIRE HOSE	INDIVIDUAL FIRE EXTING'HERS
YES	YES	NO	YES	YES

COMMENTS
NO SMOKE CONTROL SYSTEM
CLASS "B" ALARM SYSTEM - NEEDS UPGRADING

ELEVATORS	
IS THERE EXISTING ELEVATOR SERVICE	IS EXISTING ELEVATOR SERVICE ADAPTABLE FOR PATIENT STRETCHERS, CARTS, ETC.
YES	YES

DATE 11-14-80

HANS H. FINNE INC.
65 E. INDIA ROW SUITE 15F BOSTON MASS 02110

NEW ENGLAND MEDICAL CENTER HOSPITAL
BUILDING EVALUATION CRITERIA

NAME OF BUILDING PRATT BUILDING
YEAR BUILT 1938 NO. OF FLOORS 6+BASEMENT G.S.F. 51,766

SPECIAL CONSIDERATIONS

ARE THERE ANY SPECIAL CONSIDERATIONS SUCH AS EXIT STAIR LOCATIONS, CORRIDOR WIDTHS, DOOR WIDTHS, ETC. WHICH WOULD AFFECT ANY POTENTIAL RENOVATION AND REUSE OF THE BUILDING?

TO BE CONSIDERED FOR COMPLIANCE WITH CURRENT HANDICAP CODE

1. RAMP & STEPS TO ESKIND
2. STERS TO PROGER 1

CODE CONFORMANCE

DOES THE BUILDING, AS PRESENTLY OCCUPIED, CONFORM TO APPLICIABLE CODES? WHAT ASPECTS OF BUILDING ARE NONCONFORMING?

DATE 11-14-80

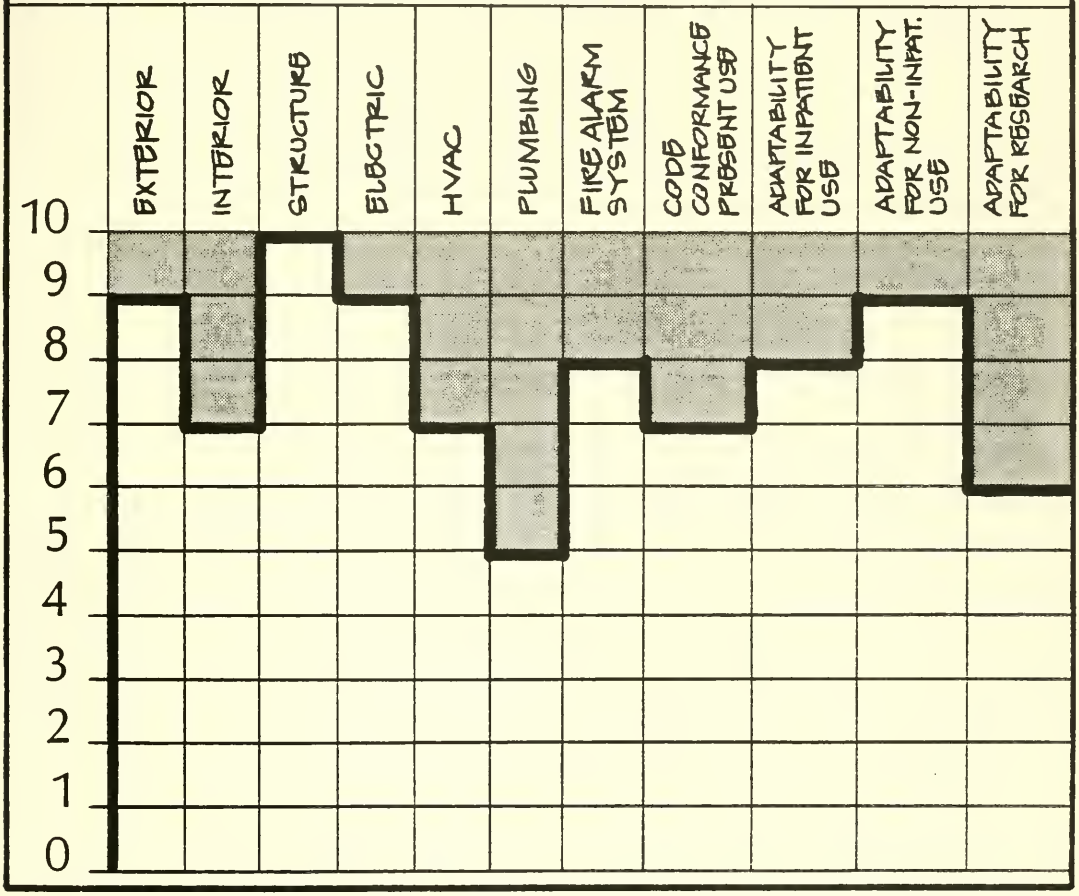
HANS. H. FINNE INC.
65 E. INDIA ROW SUITE 15F BOSTON MASS. 02110

NEW ENGLAND MEDICAL CENTER HOSPITAL
BUILDING EVALUATION CRITERIA

NAME OF BUILDING PRATT BUILDING
YEAR BUILT 1938 NO. OF FLOORS 6+BASEMENT G.S.F. 51,766

GROSS PHYSICAL BUILDING EVALUATION

RATE THE FOLLOWING COMPONENTS AS THEY EXIST IN THE BUILDING. THIS RATING IS A SLIDING SCALE FROM "0" TO "10" AND IS BASED ON CURRENT OCCUPANCY PLUS THE CONDITION OR EFFICIENCY OF THE COMPONENT. A COMPONENT WHICH RECEIVES A RATING OF "0" IS TOTALLY UNSUITABLE FOR THE BLDG. A RATING OF "10" IS VERY GOOD FOR THE BUILDING



DATE 11-14-80

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65 E. INDIA ROW SUITE 15F BOSTON MASS 02110

NEW ENGLAND MEDICAL CENTER HOSPITAL
BUILDING EVALUATION CRITERIA

NAME OF BUILDING FARNSWORTH BUILDING
YEAR BUILT 1947 NO. OF FLOORS 6+ BASEMENT G.S.F. 100,264

EXTERIOR

TYPE OF MATERIAL	COLOR OF MATERIAL	WINDOWS			
		OPERABLE OR NONOPERABLE		TYPE OF SASH MATERIAL	CONDITION OF LINTELS
BRICK LIMESTONE TRIM	RED	NORTH ELEV	OPER	METAL	GOOD
		SOUTH ELEV	OPER	METAL	GOOD
		EAST ELEV	OPER	METAL	GOOD
		WEST ELEV	OPER	METAL	GOOD

GENERAL PHYSICAL CONDITION OF THE EXTERIOR

INTERIOR

HEIGHT FROM FL. TO FL.	HEIGHT FROM FLOOR TO UNDERSIDE OF STRUCTURE	EXISTING FINISH		
		CEILINGS	WALLS	FLOORS
GENERALLY 12'-4"		CEILING TILE	PLASTER G.W.B.	TILE CARPET RUBBER TILE — UNRATED

GENERAL PHYSICAL CONDITION OF THE INTERIOR

DATE 11-14-80

HANS H. FINNE INC.
65 E. INDIA ROW SUITE 15F BOSTON MASS. 02110

NEW ENGLAND MEDICAL CENTER HOSPITAL
BUILDING EVALUATION CRITERIA

NAME OF BUILDING FARNSWORTH BUILDING
YEAR BUILT 1947 NO. OF FLOORS 6+BASEMENT G.S.F. 100,264

STRUCTURE	
EXISTING STRUCTURAL SYSTEM	UNIQUE CHARACTERISTICS
FIRE-PROOFED, STEEL-FRAME REINFORCED CONC. SLAB	3 HOUR FIRE RATING
COMMENTS	

ELECTRIC	
EXISTING ELECTRICAL SERVICE	UNIQUE CHARACTERISTICS
4000A - 3φ - 60~ - 4WIRE - 120/208 VOLTS	COPPER RISERS WITH CAPACITY OF 6000AMP
COMMENTS ELECTRICAL SERVICE FOR BOTH PRATT & FARNSWORTH 1200 - 3φ AUTOMATIC EMERGENCY POWER	

HEATING, AIR CONDITIONING, VENTILATION			
TYPE OF COOLING SYSTEM	TYPE OF HEATING SYSTEM	TYPE OF COMBINED SYSTEM	VENTILATION SYSTEM
1. THRU WALL UNITS 2. WINDOW A/C 3. FAN COIL 4. CENTRAL A/C 6TH FLOOR	1. 2 PIPE STEAM RADIATION 2. STEAM COILS IN THRU WALL UNITS	COMBINED HEAT & COOL WITH THRU WALL UNITS	1. THRU WALL UNITS 2. CENTRAL A/C
COMMENTS FUTURE MAJOR RENOVATION — UPGRADE CONCEALED DUCT SYSTEM			

DATE 11-14-80

HANS H. FINNE INC.
65 S. INDIA ROW SUITE 15F BOSTON MASS 02110

NEW ENGLAND MEDICAL CENTER HOSPITAL
BUILDING EVALUATION CRITERIA

NAME OF BUILDING FARNSWORTH BUILDING
YEAR BUILT 1947 NO. OF FLOORS 6+BASEMENT G.S.F. 100,264

PLUMBING

WATER PIPE MATERIAL	WASTE PIPE MATERIAL	VENT PIPE MATERIAL	AVAILIABILITY OF MED. GASES
BRASS	CAST IRON	CAST IRON GALV. STEEL	OXYGEN AIR VACUUM NO_2

COMMENTS
SANITARY LINES ARE ADEQUATE
VALVES IN WATER MAINS NEED REPLACING

FIRE PROTECTION

ALARM CONNECT'D TO FIRE DEPT.	EMERGENCY LIGHTING	SPRINKLER SYSTEM	CORRIDOR FIRE HOSE	INDIVIDUAL FIRE EXTING'HERS
YES	YES	NO	YES	YES

COMMENTS
NO SMOKE CONTROL SYSTEM
CLASS "B" ALARM SYSTEM NEEDS TO BE UPGRADED

ELEVATORS

IS THERE EXISTING ELEVATOR SERVICE	IS EXISTING ELEVATOR SERVICE ADAPTABLE FOR PATIENT STRETCHERS, CARTS, ETC.
YES	YES

DATE 11-14-80

HANS H. FINNE INC.
65 E. INDIA ROW SUITE 15F BOSTON MASS 02110

NEW ENGLAND MEDICAL CENTER HOSPITAL
BUILDING EVALUATION CRITERIA

NAME OF BUILDING FARNSWORTH BUILDING
YEAR BUILT 1947 NO. OF FLOORS 6+BASEMENT G.S.F. 100,264

SPECIAL CONSIDERATIONS

ARE THERE ANY SPECIAL CONSIDERATIONS SUCH AS EXIT STAIR LOCATIONS, CORRIDOR WIDTHS, DOOR WIDTHS, ETC. WHICH WOULD AFFECT ANY POTENTIAL RENOVATION AND REUSE OF THE BUILDING?

CODE CONFORMANCE

DOES THE BUILDING, AS PRESENTLY OCCUPIED, CONFORM TO APPLICIABLE CODES? WHAT ASPECTS OF BUILDING ARE NONCONFORMING?

DATE 11-14-80

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NEW ENGLAND MEDICAL CENTER HOSPITAL
BUILDING EVALUATION CRITERIA

NAME OF BUILDING FARNSWORTH BUILDING
YEAR BUILT 1947 NO. OF FLOORS 6+BASEMENT G.S.F. 100,264

GROSS PHYSICAL BUILDING EVALUATION

RATE THE FOLLOWING COMPONENTS AS THEY EXIST IN THE BUILDING. THIS RATING IS A SLIDING SCALE FROM "0" TO "10" AND IS BASED ON CURRENT OCCUPANCY PLUS THE CONDITION OR EFFICIENCY OF THE COMPONENT. A COMPONENT WHICH RECEIVES A RATING OF "0" IS TOTALLY UNSUITABLE FOR THE BLDG. A RATING OF "10" IS VERY GOOD FOR THE BUILDING

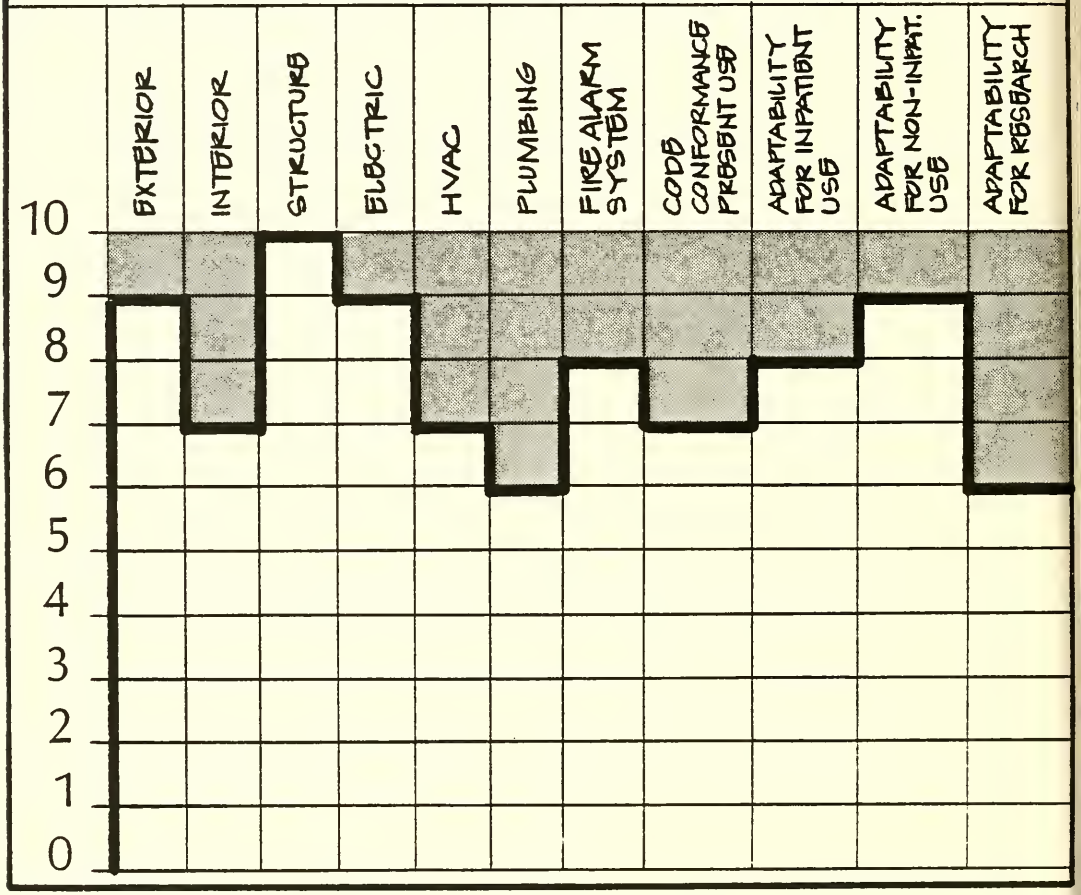

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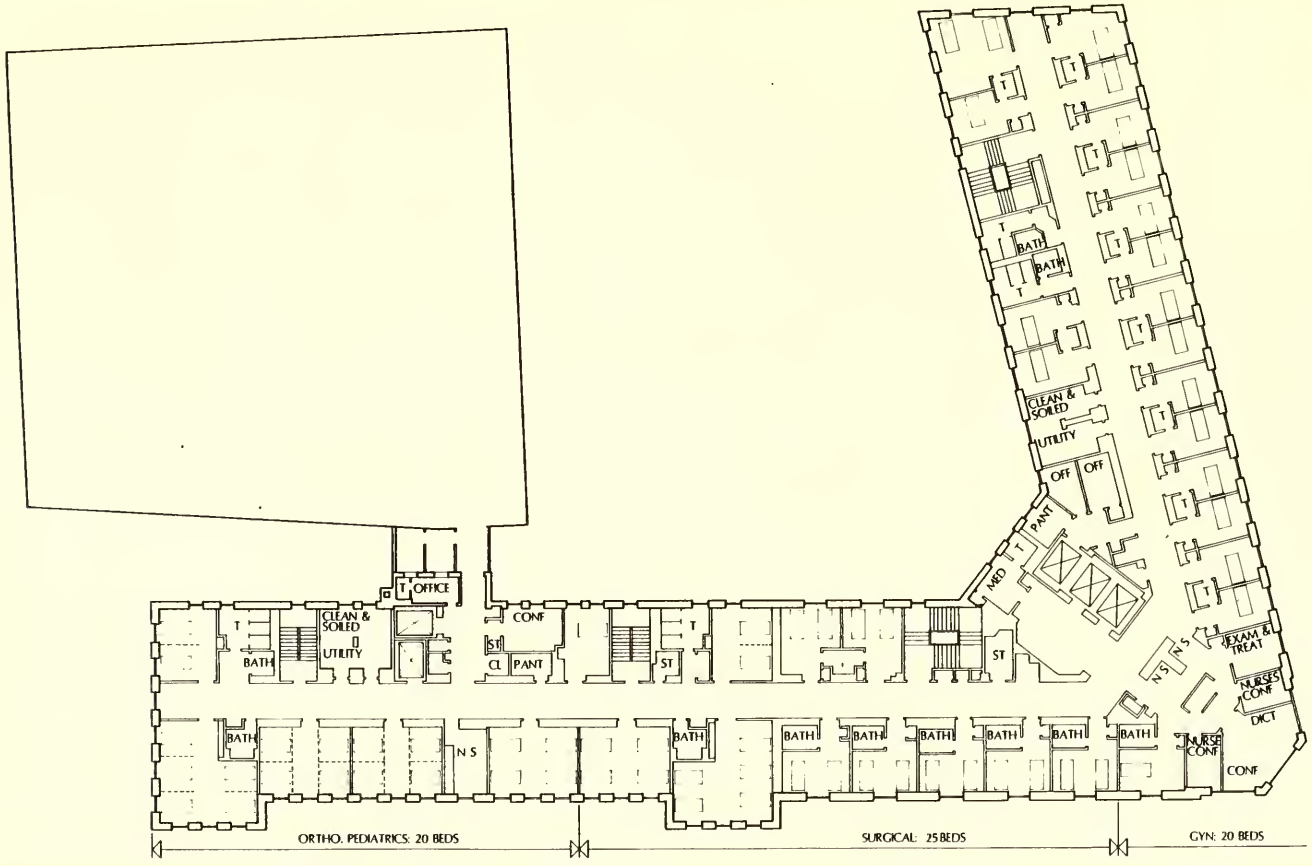
EXHIBIT B
EXISTING NURSING UNITS

EXHIBIT C
FUNCTIONAL EVALUATION



EXISTING NURSING UNITS 3RD. FLOOR

DECEMBER 1980

HANS H. FINNE INC.
ARCHITECTS/PLANNERS/HEALTH FACILITIES CONSULTANTS

NURSING UNITS FUNCTIONAL ELVALUATION

MAJOR DESIGN CRITERIA	H.E.W. RECOMMENDATIONS NEW CONSTRUCTION	D.P.H. RECOMMENDATIONS NEW CONSTRUCTION	D.P.H. RECOMMENDATIONS EXISTING CONSTR.	NEMC RECOMMENDATIONS	HFI RECOMMENDATIONS	EXISTING CONDITIONS
TOILETS ACCESSABLE DIRECTLY FROM PATIENT BEDROOMS	●	●		●	●	
SEPERATE CLEAN/SOILED UTILITY ROOMS	●	●	●	●	●	◗ IN PROCESS
BEDROOMS (EXCLUSIVE TOILETS VESTIB. WARDR.) SINGLE 100 SQ. FT. MULTI 160 SQ. FT.	●	●		●	●	
ADEQUATE CORE FACILITES TO SUPPORT NURSING UNITS	●	●		●	●	
DESIREABLE DISTANCES FROM N.S. TO PATIENT BEDROOMS APPROPRIATE TO THE LEVEL OF NEMCH NURSING CARE				●	●	
NO THROUGH TRAFFIC IN NURSING UNITS OF VISITORS,STAFF,SUPPLIES,ETC.				●	●	

EXHIBIT D

SPACE PROGRAMS

27 BED NURSING UNIT

8 BED SPECIAL CARE UNIT

EXHIBIT E

SPACE ANALYSIS

NEW ENGLAND MEDICAL CENTER HOSPITAL
SPACE PROGRAM DECEMBER 1980

Typical 27 Bed Nursing Unit		Net Sq.Ft.
11 2 Bedrooms with toilet	230	2530
4 1 Bedroom with toilet	160	640
1 1 Isolation Room with toilet	160	160
2 Showers		60
1 Tub Room		40
Nurses Station		400
Nurses doctors charting	180	
Head nurse cubicle	90	
Medication	50	
Unit Manager - Dietition Off. Social Service	80	
Classroom - Conference		180
Clean Utility		120
Soiled Utility		100
Linen Alcove		20
Pantry		120
Equipment Storage		160
Stretchers Wheelchairs		50
Janitor Closets		40
Handicapped Toilet		45
Exam and Treatment Room		150
Nurses Lounge		150
Nurses Lockers		80
Nurses Toilet		25
Visitors Lounge with toilet		230
Total net square feet for nursing unit		5300
Net square feet for core facilities		1970

Typical 8 Bed Special Care Unit		Net Sq.Ft.
8	Cubicles (12 x 14) with shared toilet 196	1568
	Nursing station including monitors	240
	Head nurse Office	80
	Dictation	60
	Medication	50
	Crash Cart	15
	Linen Alcove	20
	Conference Lounge	120
	Clean Utility	120
	Soiled Utility	100
	Nourishment Alcove	60
	Equipment Storage	140
	Stretcher and Wheelchairs	40
	Janitor Closet	30
	Nurses Lockers	60
	Nurses Toilet	25
	Visitors Waiting and Toilet	200
	Consultation	80
	Total net square feet for nursing unit	3028
	Net square feet for core facilities	1460

*	Treatment room sized for emergency cardiac catheterization and image intensification	300
*	Supervisors Office	120

* Desired, if not directly adjacent to the critical care units.

PRATT AND FARNSWORTH EXISTING NURSING UNIT SPACE ANALYSIS

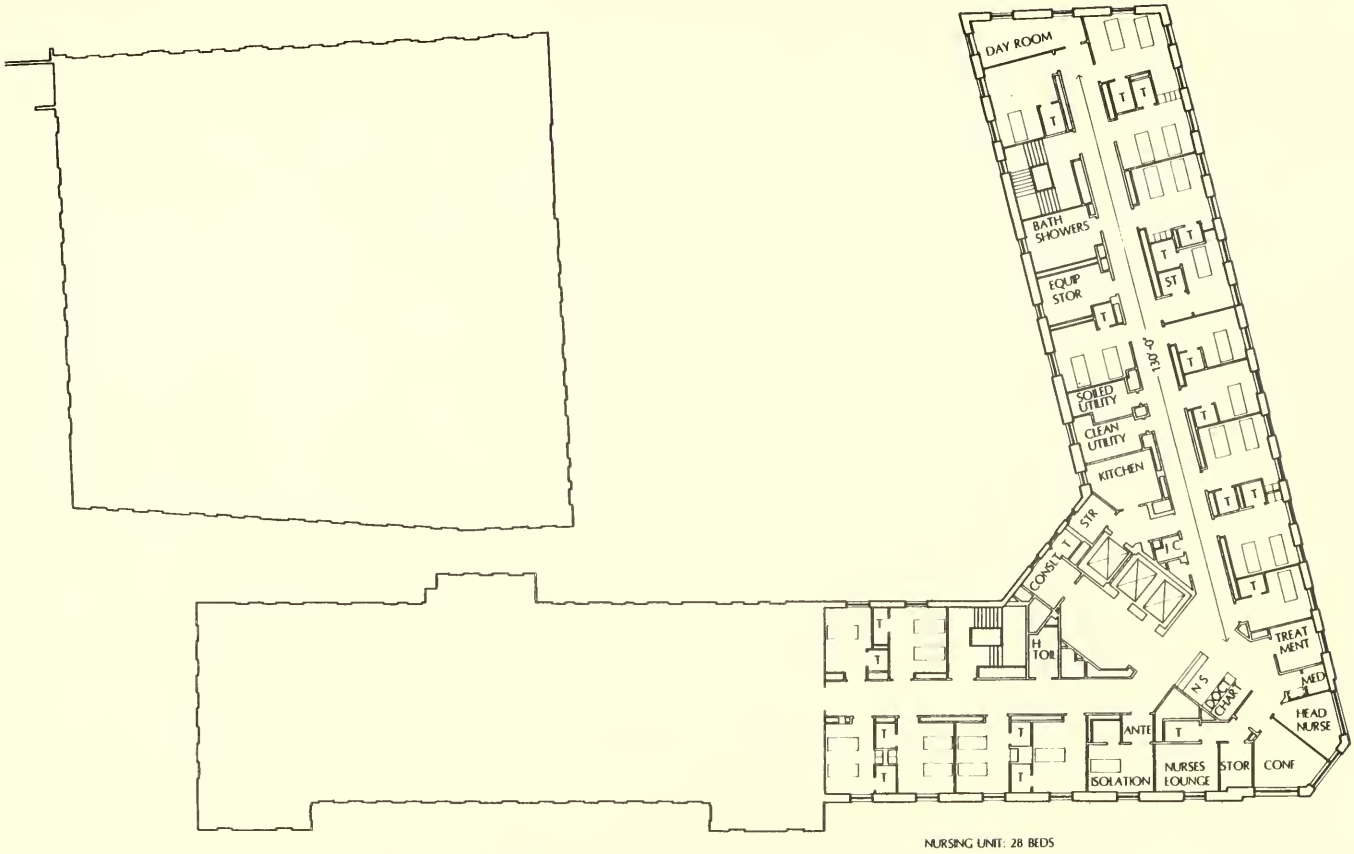
LOCATION	UNIT	CORE NET SQUARE FEET	TOTAL NET SQUARE FEET
FARNSWORTH 3 SOUTH	SURGICAL 25 BEDS	190 SQ. FT.	2500 SQ. FT.
FARNSWORTH 3 NORTH	GYN 25 BEDS	1070 SQ. FT.	3800 SQ. FT.
PRATT 4	GEN. SURGERY 27 BEDS	630 SQ. FT.	2960 SQ. FT.
FARNSWORTH 4 SOUTH	SURGICAL 26 BEDS	1230 SQ. FT.	3900 SQ. FT.
FARNSWORTH 4 NORTH	P.C.U. 5 BEDS	340 SQ. FT.	870 SQ. FT.
FARNSWORTH 4	S.I.C.U. 9 BEDS	260 SQ. FT.	1710 SQ. FT.
PRATT 5	MEDICAL 25 BEDS	830 SQ. FT.	3850 SQ. FT.
FARNSWORTH 5	NEURO & ENT 26 BEDS	1310 SQ. FT.	3800 SQ. FT.
FARNSWORTH 5	NEURO I.C.U. 8 BEDS	370 SQ. FT.	1350 SQ. FT.
PRATT 6	ORTHOPEDICS 28 BEDS	970 SQ. FT.	4700 SQ. FT.
FARNSWORTH 6	CLINICAL STUDY 15 BEDS	2000 SQ. FT.	3750 SQ. FT.

RECOMMENDED SPACE REQUIRMENT FOR A TYPICAL 27 BED NURSING UNIT

	TYPICAL 27 BEDS	1995 SQ. FT.	5285 SQ. FT.

EXHIBIT F
RENOVATION STUDY

EXHIBIT G
ALTERNATIVE RENOVATION STUDY



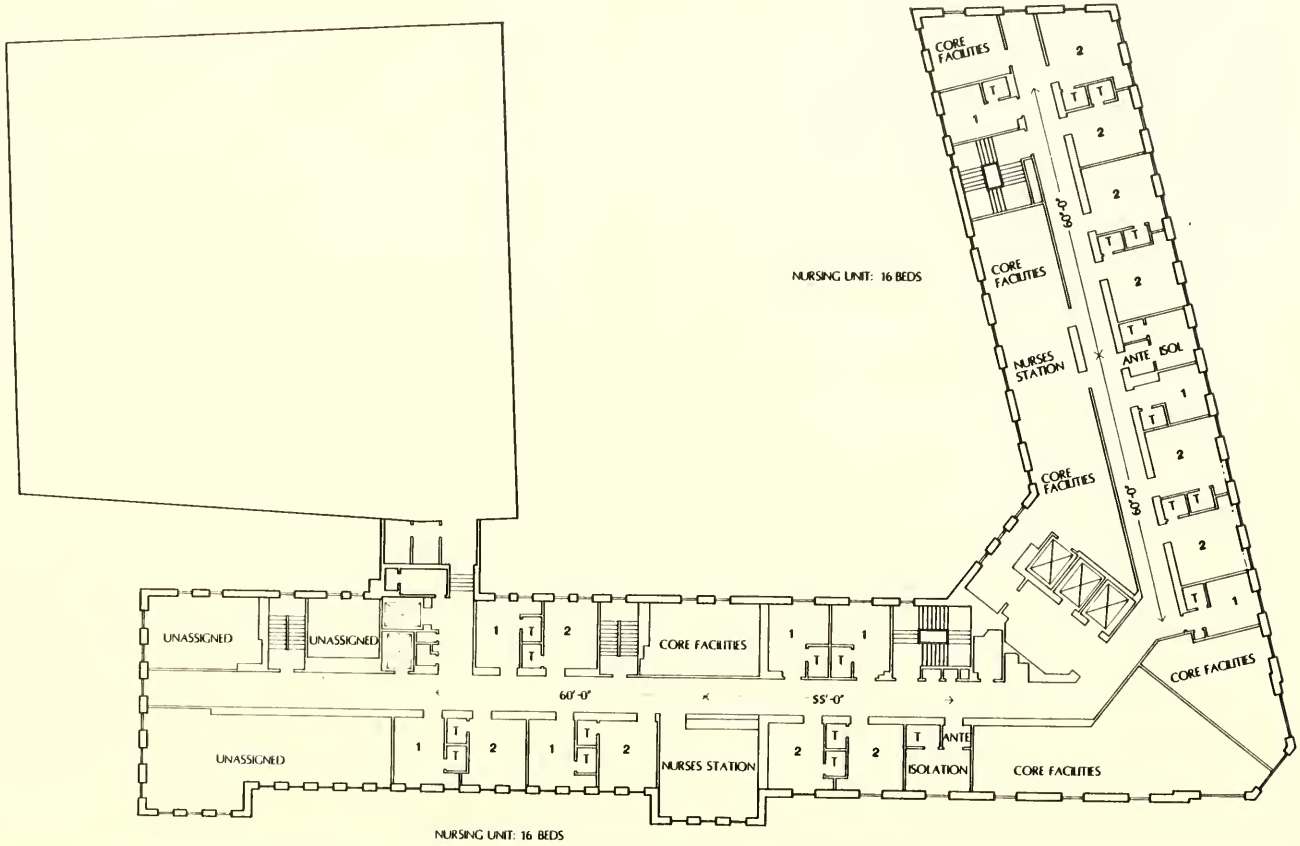
NURSING UNIT: 28 BEDS

RENOVATION FEASIBILITY STUDY 6TH. FLOOR FARNSWORTH BUILDING

HANS H. FINNE INC.

DECEMBER 1980

ARCHITECTS/PLANNERS/HEALTH FACILITIES CONSULTANTS



ALTERNATE RENOVATION FEASIBILITY STUDY PRATT/FARNSWORTH BUILDING

DECEMBER 1980

HANS H. FINNE INC.
ARCHITECTS/PLANNERS/HEALTH FACILITIES CONSULTANTS

HANS H. FINNE INC. Architects/Planners/Health Facilities Consultants

65 East India Row Suite 15f
Boston, Massachusetts 02110

APPENDIX 6

Summary of Accreditation Review Comments

ACCREDITATION ON MEDICAL EDUCATION 1954, 1963, 1971, 1977, 1980

1954: The availability of Medical Library material in the Boston area makes the relatively restricted size, resources and financing of this library less serious than it might be if less favorably situated. It is, nevertheless, a surprisingly restricted library in view of its central servicing of both Medical and Dental Schools. It will undoubtedly need increased space as the building facilities are eventually readjusted through relocation of the dental clinics.

1963: The library includes a restricted, overcrowded reading room with a stated seating capacity of 106. The space for the library is most inadequate, particularly since it not only serves the Medical and Dental Schools, but also the entire Medical Center.

1971: The lack of sufficient seminar rooms and an auditorium in which at least two classes or, better, the entire student body and faculty could be convened are severe limitations. Ultimately, a new building will be required to house a large auditorium, lecture halls, seminar rooms, and perhaps the library.

1977: Library resources are inadequate to support the teaching and research programs of the School of Medicine... The space allocated for teaching laboratories, research laboratories, faculty offices, classrooms, lecture halls and student lounges is not adequate for the programs now underway at the Medical School. The lecture halls in the School are quite inadequate. The number of seats in these halls approximately equal the size of the entering Medical School class... There is insufficient study space on the premises for students.

1980: The lecture hall facilities of the school defy description -- one must see, or worse yet, sit through a two hour lecture in them to gain appreciation of the effect they must have on even the most enthusiastic student's learning... Construction of new (or total renovation of existing) lecture halls should be top priority.

The teams are concerned with what appeared to be a woefully inadequate library, both in facilities and collections .... the construction of a modern library building to serve the entire New England Medical Center constituency has been given top priority in the long-range development plan of the University. It is the opinion of the survey team that the new library would contribute greatly to the academic success of the Tufts University School of Medicine.

1980: There is no one space large enough for conferences. The largest auditorium seats 160, a number smaller than the number of students in one class and the faculty and residents who would wish to take part... recreational and study space in the existing plant are wholly inadequate.

ACCREDITATION ON VETERINARY MEDICINE, 1981

1981: There is a need for additional holdings pertaining to Veterinary Medicine, and for additional seating space in the Health Services Library. Because of the large number of graduate students and faculty requiring library services, improvement in this area is urgent... Faculty office and laboratory space, particularly in Boston, are inadequate.

PROGRAM FOR TUFTS UNIVERSITY HEALTH SCIENCES LIBRARY

Earl R. Flansburgh & Associates, Inc.
14 Story Street
Cambridge, Massachusetts 02138
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INTRODUCTION

The firm of Earl R. Flansburgh and Associates, Inc., Architects and Planners, was retained in mid-March 1977 to prepare a space program for the Tufts University Health Sciences Library. This proposed Library will serve the existing medical, dental, occupational therapy, clinical, scientific and other allied health programs, their faculties and students. In addition, it will serve the known new programs in Veterinary Medicine and Nutritional Research and provide accommodations for other projected research centers.

It has been clear for sometime that the Health Sciences Library must be dramatically expanded in size. This is a project that has high priority among the administration, faculty, students and staff on the Tufts University Boston Campus.

This is a dynamic time for Tufts University. If the Library does not grow, all programs, both existing and new, will suffer.

The program has been drafted as the result of two months of intensive study, interviews and discussion. A representative sample of members of the Tufts University health sciences community was selected and each person interviewed. Their needs for library facilities and their attitudes towards the library were carefully considered. Their recommendations are woven throughout this program. Their opinions and priorities were carefully weighed by the Health Sciences Library Program Committee.

The interview information and Committee discussions were combined with technical and philosophical information from a variety of sources. The resulting program is designed to accurately reflect the specific needs for a Health Sciences Library on the Boston Campus of Tufts University. This is a carefully tailored program for this institution and should not be considered a prototype for any other institution.

The program is designed to provide for Tufts growth in a realistic and responsible fashion. Specific areas of expansion are identified and contingent expansion areas are recommended.

At the end of this program the anticipated cost implication of the program are given. (Table 8, PROJECT COST) It is important to stress four basic points as the cost and alternatives are considered:

1. If a new Health Sciences Library is to be built, it is important to build it large enough. A new library, inadequate in size, is a poor capital investment and of modest benefit to the users.

2. The cost of any project escalates each year. This has been true in the construction industry every year since the end of World War II. The rate of escalation varies, but a reasonable allowance is 7 to 10% per year. So time is important and does cost money.

3. When the costs of this Library are considered, the cost of adequate staffing and operation must also be considered.

4. There is, of course, one final cost that must be weighed and this is only partially a financial cost. We can establish what the price is to build and operate this Library. In terms of the priorities of the University and this Health Sciences Center, we must also weigh the cost if we do not build the Library.

As is the case in any complex effort, this program has been developed with the assistance of many individuals. A list of the persons interviewed appears at the end of this section.

We have tried to make this program clear, concise, and a resource document to help answer the many questions which will arise. It is hoped that this will be another step in the development of an outstanding library facility at Tufts.

The Tufts University Health Sciences Library was discussed with the following individuals:

Jean Mayer, Ph.D., President of the University

Lauro Fred Cavazos, Ph.D.,
Dean, School of Medicine

Robert B. Shira, D.D.S.,
Dean, School of Dental Medicine

Members of the Tufts University Health Sciences Library Program Committee:

Percy H. Hill, S.M., Chairman, Department of Engineering Design

Edward Hodgson, Ph.D., Department of Biology

Kurt Schmidt, M.D., Chief of Anesthesiology, Tufts-New England Medical Center

Helmi Fogels-Rozankowsky, D.M.D., Assistant Dean of Special Projects, School of Dental Medicine

Frank R. Susi, D.M.D., Ph.D., Assistant Dean of Basic Sciences and Research Coordinator, School of Dental Medicine

Donald B. Darling, M.D., Chairman, Learning Resource Committee; Professor of Pediatrics and Radiology, School of Medicine

Norman S. Stearns, M.D., Associate Professor and Assistant Dean for Continuing Education, School of Medicine

Joseph S. Komidar, M.L.S., University Librarian

Interviews were also held with the following individuals:

Edward P. Leavitt, Librarian, Medical and Dental School Library

Thomas Murnane, Ph.D., Assistant to the President for New Health Programs, Tufts University

Samuel Prodger, M.D., Physician and Chief Emeritus, New England Medical Center Hospital

Richard P. Stetson, M.D., District Liaison for Telemedicine and Learning Resources, Veterans Administration Hospital, Jamaica Plain

School of Dental Medicine:

Jerome B. Smulow, D.M.D., Professor of Periodontology

Jay Stinson, M.S., Associate Dean for Administration and Student Affairs

Joseph I. Tenca, D.M.D., Chairman of Endodontics Department

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Joan Borysenko, Ph.D., Assistant Professor of Anatomy

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Allen Callow, M.D., Trustee, Vascular Surgery

Jordan J. Cohen, M.D., Professor of Medicine

Sydney S. Gellis, M.D., Chairman of Pediatrics

Karen Hitchcock, Ph.D., Acting Chairman, Associate Professor of Anatomy

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Lucian L. Leape, M.D., Professor of Pediatric Surgery

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Theodore L. Munsat, M.D., Professor and Chairman of Neurology

Donald Wallach, M.D., Department of Physiology and Radiobiology

Sheldon M. Wolffe, M.D., In-Coming Chairman, Department of Medicine

SITE FOR LIBRARY

Evaluation of potential sites for the Health Sciences Library is not part of the scope of this program. There are, however, several considerations which have evolved as the result of the development of the program. These are included here as basic information.

Location

The physical location of this library is considered by many of its potential users to be the key to its success. They believe it should be at the very heart of the Boston Campus of Tufts University. Many of the users believe that failure to place it at the center of the Boston Campus would substantially reduce its effectiveness.

Site Connections

In addition to its central location, weather-proof enclosed links should connect the library with other Center instructional buildings and the hospitals. These links are important for easy access in New England's poor weather and vital for safe night-time access to the library.

Site Size

The site size should be large enough to allow the accommodation of the entire library program

on three or a maximum of four floors. The major reading areas and the surge classrooms should all be on the same floor.

Because of the real estate value and short supply of land in this Health Sciences Complex, it is assumed that in addition to the three or four floors of library facilities, the total building will have several floors of other facilities. Some of the possible spaces are described below and in Table 6, ADJACENT SPACES.

To allow for growth beyond the expansion provided for in this program, the floor above the library in any multi-use health sciences building should be sufficiently flexible so that it could be converted to library use if requested.

Adjacent Spaces

The library is the heart of every educational institution. As the heart of the Boston Campus of Tufts University, this library should be adjacent to several existing or proposed facilities. In an urban setting, adjacent can mean above or below as well as along-side. Because of the high premium placed on available land in the Center, it would seem wise to make the Health Sciences Library part of a larger facility. Included in that larger building might be: classrooms, a student center, a faculty club, the proposed research centers and a united central administration space providing adjacent offices for the Deans.

Site Expansion

It is assumed in the above discussion that the expansion of the Library will be accomplished, if required, by converting space dedicated to other uses in the building containing the Library and other facilities.

If the Library is contained in a building dedicated to only that one function, then some provision has to be made either to expand the Library vertically, not increasing the "footprint" of the building, or increasing it laterally, using more land.

Transportation to Site

Library users will arrive at the site by foot from the MBTA and car parking and by Shuttle Bus from Medford. Many potential users, especially from the Medford campus, are concerned about the problem of Shuttle Bus service. They believe that the frequency of the Shuttle Bus should be increased. To facilitate bus loading, the Shuttle should be able to pull off the street under a covered entrance way. This same vehicle entrance should allow automobiles to discharge passengers without backing up traffic.

Site Parking

Many of the potential users of this Health Sciences Library are already parking in or

near the Boston Campus of Tufts University. However, according to many users of the present library, there is currently a shortage of available, convenient parking spaces. The scope of this study did not include a Center wide study of parking requirements or supply.

With the construction of this Library, it is recommended that any present parking deficiencies be eliminated and sufficient parking expansion be created to accommodate the increased number of faculty and students generated by the new School of Veterinary Medicine and the Nutrition Research Center. Parking should also be provided for other anticipated new divisions or centers.

If the Library site selected is an existing parking lot, the quantity of parking eliminated should be replaced. The new parking provided should be as close as possible to the Health Sciences Library. Some analysis should also be made of the parking requirements to support the Continuing Education Program.

The only parking spaces specifically associated with the Library would be several short time bays or meters to allow the pick-up and delivery of books. These spaces should be directly adjacent to a library entrance.

GENERAL CHARACTER OF THE LIBRARY

In the planning of a new library it is important to consider the general character and philosophy of the facility as well as its specific needs. Discussions with potential users of the new Health Sciences Library identified many strong opinions about the Library's general character. Several of these opinions were expressed in almost every interview and are summarized in the following paragraphs:

Priority of Users

In planning the Library, when decisions concerning emphasis must be made, the decision should favor the highest priority user. The Library has essentially three priorities of users. They are the following:

Priority 1 - The user who comes to the Library to use the Library's books and journals.

Priority 2 - The user who brings his own books or journals and uses the Library for study space only. He does not need the Library's resources, but he may decide to use them while studying.

Priority 3 - The user who comes to the Library to use its audio-visual equipment and software.

Basic Philosophy for the Library Collection

The basic philosophy for the collection of the Health Sciences Library should be that it provides, through a variety of means, the easy retrieval of information. This means the easy availability of books, journals, mono-graphs, audio-visual material and reference and index materials. This library must serve the needs of health science education and many areas of health and scientific research.

The demands of education require sufficient flexibility in the collection to adjust to major trend changes within a field. There are approximately 4,600 faculty and students in this Center, not counting the Allied Health fields. With a variety of health sciences professional fields being served by this Library, the response to a significant trend may involve many books and frequently will involve multiple copies of books to serve a large group of users. A new trend may increase the enrollment in a specific field. As a corollary, however, a new trend may decrease enrollment in another specific field.

The demands of research frequently require extreme depth of information in a very narrow discipline. The information may be available in only a few obscure books or journals.

Both the broad sweep and the deep probe have implications for the character and management of the Library and for the Library Program. This find of flexibility can be accommodated in a health sciences library by allowing for vast stack spaces. These vast stacks hold many books and bound periodicals that are infrequently used for research.

In preparing the program for the Tufts University Health Sciences Library, we have chosen a middle ground. We have assumed that a library growth selection policy of careful management will be exercised in the purchase and retention of books and journals. This means that it will not be necessary to have as substantial stack space as the recently completed Augustus Long Health Sciences Library at the College of Physicians and Surgeons, Columbia University (425,000 volumes) or the Countway Medical Library at Harvard University (750,000 volumes).

The development of this program around this careful management approach acknowledges the economic reality of high capital cost for the initial plant construction and the continuing cost of large plant operation. Reflecting these financial concerns, but also allowing for unexpected growth, we recommend that if the Library is located in a building having several functions, that the floor above the library be sufficiently flexible to accommodate growth beyond the expansion envisioned by this program.

The stack capacity was selected by a careful estimate of the known stack requirements and

provision for reasonable expansion. (See Table 3, REQUIRED STACK SPACE) The capacity of the stacks shown in this program is approximately 235,000 volumes. This number was developed by taking the existing collection of approximately 79,000 volumes and adding to it the known new programs and expansion at the current rate (4,000 - 5,000 volumes) for 20 years.

With this amount of stack space, the addition of a whole new school in the health sciences field would have only a modest effect because of the extensive duplication with the existing health sciences collections. A good example of this is the current addition of the School of Veterinary Medicine. This school, at its maximum capacity, will increase the Library by only approximately 29,000 volumes. This is based on the capacity of the largest library at a School of Veterinary Medicine (Cornell Universtiy) in the United States.

The 235,000 volume stack capacity does have one limitation. If programs in the field of Social Science, where the literature is substantial, were added to the Boston Campus, then the flexibility of the Library would begin to be limited.

With this one exception, we believe that the middle ground reflected in Table 3 will allow adequate volumes and journals and still permit appropriate and realistic flexibility. This flexibility will fit the current and long range demands of professional education and research.

The Role of the Department Library

Currently there are approximately 7,550 books and bound periodicals in Departmental Libraries at Tufts. This is about 10% the size of the Main Health Sciences Library.

As a strong central library grows at Tufts, it might be useful to study the concept of Departmental Libraries or Departmental Core Libraries. This study should consider the needs of the clinical services and the basic science libraries.

The Impact of Continuing Education on the Library

The exact impact of Continuing Education is impossible to predict. All the users of the Library interviewed felt that Continuing Education will grow for professionals in health fields.

There are three kinds of Continuing Education that should be considered:

1. Training for re-certification by the Society or Board in a particular specialty. The periodic exam gives the health specialist permission to practice using the name of the review board.

2. Training for re-licensure by the civil authority that grants the license for the health

professional to practice. The need to have licenses reviewed is now being considered by two states. It is anticipated that if the re-licensing law passes in those two states that many other states will pass their own laws. The growth of these laws will substantially increase the level of Continuing Education.

3. Training simply to improve the health professional's skill.

The duration, financing and requirements of these programs are still too vague to predict specifically their future impact on the health sciences library. We can, however, make a few generalizations. The programs will undoubtedly require both a large auditorium and small group rooms. Many of the practitioners may wish to buy their own books rather than using library books for studying, so the use of the Library may be more for reserve books. With these factors in mind, the impact on the Library may simply involve slightly increased continual use.

Continuing Education programs should be related to the undergraduate health education and school schedules. These programs should not be scheduled at examination time in the library because they will compete with other normal library users.

Audio-Visual Program

The growth of audio-visual aids has led to divergent thinking about their success. Some faculty members believe they have proven to be outstanding in their aid to student comprehension. Others feel audio-visual aids place tremendous emphasis on the technical sophistication of the hardware and little emphasis on the content of the software.

There were three points where there seemed to be agreement:

1. The most effective software is the software you make of have made yourself.

2. The Library ought to issue and retrieve the software, but have nothing to do with its technical fabrication.

3. Audio-visual materials rapidly become obsolete. Provision must be made for their continual up-dating.

There is one aspect of the use of audio-visual materials that has an important effect on the character and planning of the Library. Three or four times a year, many of the students in the different health professions have major exams at the same time. Studying for these exams frequently involves intensive use of the slides and other audio-visual aids. This puts a surge stress on the library and the audio-visual facilities. This problem has been addressed in Table 6, ADJACENT AREAS.

Security

Security in the Library is a major problem in today's environment. It is important in the initial planning of the facility. The success of that initial security planning is continually reflected in the operating cost of the Library.

The Region and the Regional Library Approach

In planning the Tufts University Health Sciences Library it is important not to try to be all things to all people. This library is located in one of the greatest concentrations of college and post-graduate research libraries in the world. The Countway Library of Medicine at Harvard serves as a regional resource library for New England in the national bio-medical communications network. The Countway Library also contains the Boston Medical Library that is available to any physician. It would be foolish and impossible to try to reproduce these collections.

Certain kinds of highly specialized texts are available at the Wessel Library and at Harvard and MIT. It is assumed that through the inter-library loan program and other cooperative understandings, the Tufts faculty and students will continue to use these resources. The inter-library loan in books allows cooperation among libraries. This cooperation avoids unwarranted duplication. It should be encouraged even though Tufts is proposing to almost triple its active collection.

Heart and Romance

The library is the physical and emotional heart of an educational institution. In the building of the Health Sciences Library, Tufts has an opportunity to produce an outstanding intellectual facility: a facility that will aid the students and uplift the faculty.

There is a certain romance that goes with books. One of the professors interviewed said: "Don't program the books out of the library." We can take him literally, but we believe he was talking of the general intellectual stimulation that comes from a library. Stimulation that comes from easy access to knowledge, regardless of whether it is found between the worm covers of a book or on the crisp plastic of a microfiche card. The objective of this library program is to help promote this effort towards the easy access to knowledge.

LIBRARY POPULATION

TABLE 1

The following table (Table 1, LIBRARY POPULATION) shows the full time (F.T.) and part time (P.T.) faculty positions where that information is available. The number of seats required is broken down into specific seat types in Table 4, SEATING AREAS.

LIBRARY POPULATION		NO.	ESTIMATED SEATS	
			Percent	No. of Seats
1) Faculty				
Dental	F.T.	57	20	11
	P.T.	281	10	28
Basic Sciences	F.T.	25	20	5
	P.T.	70	10	14
Clinical	F.T.	433	20	87
	P.T.	1,317	10	132
Occupational Therapy	F.T.	8	20	5
	P.T.	16	20	
Nutrition Center		150	20	30
Veterinary Medicine		20	20	4
Other Allied Health*				
Sub-Total		2,377		316
2) Students				
Undergraduate	Dental	465	25% for yrs. 1-2; 20% for yrs. 3-4	383
	Medical	617		
	O.T.	215		
	V.M.	400		
	Other Allied Health*			

		NO.	ESTIMATED SEATS	
			Percent	No. of Seats
2) Students (Continued)				
Graduate	Bio/Sciences	57		
	Dental	88	25	40
	Nutrition	16		
	V.M.	--		
	Other Allied Health*			
Sub-Total		1,858		423
3) Resident, Interns, Fellows		366	25	93
TOTAL		4,601		832

*The number of Other Allied Health students and faculty members is not currently available.

In addition to the above:

(1) The New England Medical Center Hospital's payroll dept. states that there are 2,900 professionals or paraprofessional employees in addition to its maintenance crew and staff of 700 physicians. About 800 of this 2,900 are registered nurses.

(2) There is a large group of students in NortheasterUnivierity's program for dental assistants. They use the Tufts Library for clinical materials because they receive their clinical training at Tufts Dental Clinics.

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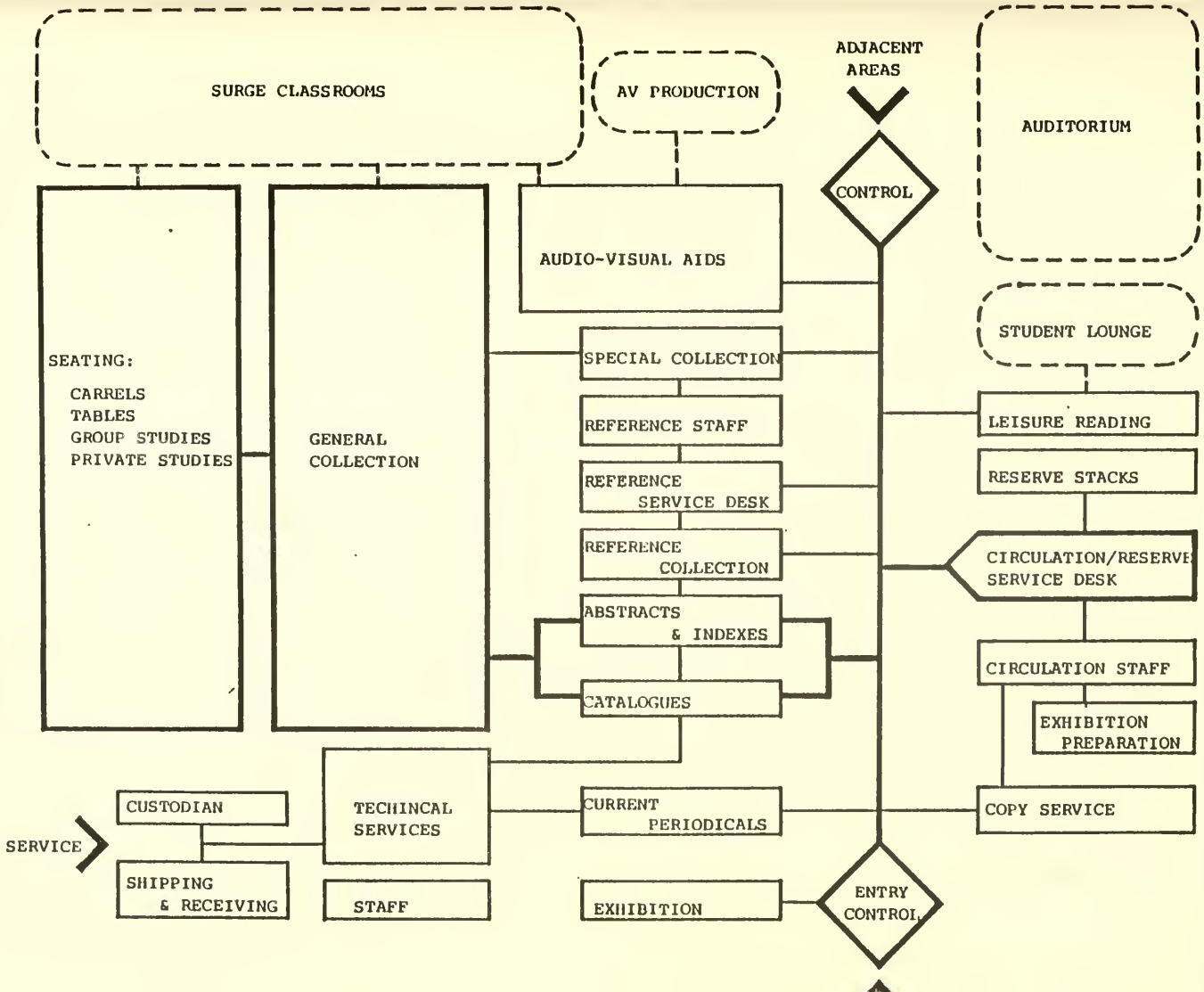
LIBRARY POPULATION

SPACE RELATIONSHIP DIAGRAM

TABLE 2

Table 2 is a diagrammatic representation of the functional relationship of spaces to be provided in the proposed Health Sciences Library.



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SPACE RELATIONSHIP DIAGRAM

2

REQUIRED STACK SPACE

TABLE 3

The following table (Table 3, REQUIRED STACK SPACE) shows two groups of information. The first group reflects the required space using normal 7'-6" high shelving. The second group shows the space required for 3'-0" high shelves. The 3'-0" high shelves are not recommended for this Library. However, recent Federal regulations concerning the handicapped may, at sometime in the future, require lower shelves. We thought that information concerning the impact on the Library of this type of regulation would be informative. We have contacted the Massachusetts Department of Public Safety on this matter and they have indicated that their current interpretation of Federal Guidelines does not require lower shelves.

The existing Tufts University Health Sciences Library has 78,701 volumes and subscribes to 1,334 periodicals. Its rate of growth is 4000 to 5000 volumes (both books and bound periodicals) per year. Using round numbers, the existing 79,000 volumes (Item 1) on the attsched Table 3, REQUIRED STACK SPACE, will grow approximately 100,000 volumes (Item 5) in twenty years. This would allow keeping the present periodicals plus twenty years of growth on the shelves. It is assumed that back periodicals would not be culled for storage before twenty years. The 100,000 volumes also provides some contingency for new research centers like the Nutrition Research Center.

The Veterinary Medicine collection is based on the Cornell College of Veterinary Medicine Library, the largest veterinary medicine library in the United States. Its current collection is 61,000 volumes, of which 20,000 are medical. Of the remaining 41,000 volumes, approximately 27,000 are bound periodicals and 14,000 books. Assuming Tufts would aim for the best quality library, we have allowed 14,000 volumes - books (Item 2) and 15,000 volumes - bound periodicals (Item 3).

The Nutrition Research Center will make substantial use of this Library, but there is extensive overlap in the existing health sciences collection in both books and bound periodicals. Therefore, it was assumed that 8,000 volumes would be adequate (Item 4).

The planned General Collection total is 216,000 volumes. It is assumed that when the Library reaches this capacity, the average shelf fullness will be 75-80% as opposed to the normal operating fullness of 65-70%.

It is generally agreed by all of the library users that a modest increase in the number of journals and periodicals would be desirable. We have increased the number from 1,334 to 2,100 titles (Item 6). All current periodicals should be displayed.

Most of the library users felt that there should be some space for leisure reading. The definition of leisure reading varied. However, the determination of the subject matter was not a requirement of this program. Item 7 indicates 2,000 volumes in Leisure Reading. Since comprehensive cataloging and collection growth are not a problem here, 95% shelf utilization was considered appropriate.

Reserve Books (Item 8), Reference Bibliography (Item 9), Indexes and Abstracts (Item 10) and In Progress Materials (Item 12) are self-explanatory. Reference and Bibliography are shown at 50% because this area grows each year.

In the interviews and the discussions with the Committee, there was considerable interest in an Archieves or Special Collections area. This was not only for present volumes, but also as a magnet for a future gift of rare books to the Library. To reflect this interest and possible gift to the Library, 500 square feet (Item 11) was provided.

One of the most controversial subjects was whether or not the Library should be open 24 hours a day. The final concensus was a compromise "no". Open the Main Library from 7 a.m. to 11 p.m. or midnight. A librarian should be on-call to handle emergency problems when the library is not open.

PRINTED MATERIAL COLLECTION TYPE	COLLECTION SIZE	UNITS SF	% CAP. FILLED	SF REQ'D FULL HT. STACK	ALTERNATIVE SYSTEM		
					Units SF	% Cap. Filled	SF Req'd Half Ht. Stack
1) Existing Medical, Dental, Allied Health, Continuing Education, Graduate, Basic Science, and Occupational Therapy	79,000 Vols.			6,583 SF			15,370 SF
2) Veterinary Medicine (Books) (3)	14,000 Vols.			1,167 SF			2,724 SF
3) Veterinary Medicine (Bound Periodicals) (4)	15,000 Vols.			1,250 SF			2,918 SF
4) Nutritional Research (5	8,000 Vols.			667 SF			1,556 SF
5) Expansion	100,000 Vols.			8,333 SF			19,455 SF
General Collection Total:	216,000 Vols.	12	75-80%	18,000 SF	5.14	75-80%	42,023 SF
6) Unbound Current Periodical Titles	2,100 Titles	2	75-80%	1,050 SF	.857	75-80%	2,450 SF
7) Leisure Reading	2,000 Vols.	15	95%	135 SF	6.43	95%	311 SF

PRINTED MATERIAL COLLECTION TYPE	COLLECTION SIZE	UNITS SF	% CAP. FILLED	SF REQ'D FULL HT. STACK	ALTERNATIVE SYSTEM		
					Units SF	% Cap. Filled	SF Req'd Half Ht. Stack
8) Reserve Books	3,000 Vols.	12	75%	250 SF	5.14	75%	584 SF
9) Reference/ Bibliography	3,500 Vols.	10	50%	350 SF	4.3	50%	814 SF
10) Indexes/Abstracts	6,000 Vols.	4	50%	1,500 SF	1.7	50%	2,647 SF
11) Archives/Special Collections	--	--	--	500 SF	--	--	--
12) In Progress Materials	1,250 Vols.	10	50%	125 SF	4.3	50%	290 SF
TOTAL: SF REQUIRED				21,910 SF			

NON-PRINTED MATERIAL COLLECTION TYPE (6)	COLLECTION SIZE	% CAPACITY FILLED	SF REQ'D (VARIOUS STORAGE SYSTEMS)
1) Microfilm Reels	5,500		
2) Microfiche Cards	15,000		
3) Films, Filmstrips	400		
4) Video Cassettes	1,000		
5) Slides (in carousel stor.) Over 40 slides/carousel	20,000	80% (assumed)	
TOTAL SF REQUIRED			3,000

SEATING AREA

TABLE 4

Table 1, LIBRARY POPULATION, shows 832 seats required. After careful review of the library's proposed level of use and the use of comparable libraries, it was felt that a seating population of 832 in the library would exist only at a few critical times,i.e. just before exams. To design the library with seating for that student "surge" population would be wasteful. Therefore, the library population was reduced to 700 in library related facilities and the remaining 135± seats would be located in "surge" classrooms and seminar spaces.

The "surge" classrooms and seminar spaces are spaces adjacent to the library and open both into the library and into a circulation corridor external to the library. When they are used in conjunction with the library they have an alarm on the door exiting to the corridor. When they are used as a class or seminar room they have an alarm on the door leading to the library. This provides library expansion space when needed.

The furniture in the surge spaces is designed to function as classroom, seminar or library furniture.

The area of the surge classrooms is not included in the total library program area. These classrooms are also described in Table 6, ADJACENT AREAS.

Recommended good practice for seating in Graduate or Research Libraries is 70% carrels or individual seating, 15% flat tables, 10% group study rooms and 5% lounge chairs. Like most recommended standards, it has to function as a guide. We have the following breakdown: (( ) equals above percentage of 700 seats.)

1.	Individual Seating		
1.1	Individual Carrels	300	
1.2	Faculty Studies	25	
1.3	Reference Area	20	
1.4	Indexes/Abstracts	50	
1.5	AV Carrels	25	
		425	(490)
2.	Flat Tables		
2.1	10-4 person tables	40	
2.2	Current Periodicals	28	
		68	(105)
3.	Group Study Rooms		
3.1	8-4 person small conference rooms	32	
3.2	6-6 person small conference rooms	36	
3.3	History of Medicine	8	
3.4	10-6 person AV viewing rooms	60	
3.5	1-25 person AV viewing room	25	
		159	(70)
4.	Lounge Chairs		
4.1	Current Periodicals	26	
4.2	Leisure Reading	25	
		51	(35)

The above breakdown reflects the attitudes of the users at Tufts University, not a universal standard.

The area allocated for study carrels is 35 square feet per carrel. This is based on traditional study carrels or some variation of that carrel. We believe that 35 square feet is too small. We recommend 45 square feet, based on a more ideal and useful carrel shown in Appendix A-1, CARREL SPACE REQUIREMENTS. The program still carries 35 square feet. The more ideal carrel would add 3,000 square feet to the program.

Because of the growing use of audio visual devices we would recommend that all carrels have duplex outlets at the floor if not in the carrel. The floor outlet allows moving the carrel.

Almost every user interviewed expressed a desire to have faculty studies in the library for the purpose of writing articles or a book. That space is provided (Item 2 Faculty Studies). The studies should have tack board and chalk board and be lockable. They should be available on a 30-day or yearly basis.

For the layout of the proposed faculty studies see Appendix A-2 FACULTY STUDIES. Faculty studies should all have duplex outlets (2 minimum), telephone jacks and television outlet.

SEATING (700)	UNITS	AREA (S.F.)
1) Individual Carrels (includes lockable and 30-day assigned carrels)	75 x 45 sf/carrel 225 x 35 sf/carrel	3,375 7,875 11,250
2) Faculty Studies	25 x 80 sf	2,000
3) 8 - 4 Person Small Conf. Rms.	32 - 8 x 140 sf	1,120
4) 6 - 6 Person Small Conf. Rms.	36 - 6 x 210 sf	1,260
5) 10 - 4 Person Tables (Scattered)	40 x 25 sf	1,000
6) Current Periodicals (Lounge Seating)	26 x 30 sf	780
7) Current Periodicals (4 Person Tables)	28 x 25 sf	700
8) Leisure Reading (Lounge Seating)	25 x 30 sf	750

SEATING (700)	UNITS	AREA (S.F.)
9) Reference Area	20 x 25 sf	500
10) Indexes/Abstracts	50 x 25 sf	1,250
11) History of Medicine & Archives	4 x 25 4 x 30	220
12) AV Carrels	25 x 45 sf	1,125
13) 10 - 6 Person AV Viewing Rooms	60 - 10 x 210 sf	2,100
14) 1 25-Person AV Viewing Room	25 x 35 sf	875
SUB-TOTAL S.F.: SEATING AREAS		24,930

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SEATING AREAS

Most of the individual spaces in the Support Areas are self-explanatory. However, the Audio Visual Aids area is described in detail below because of the variations that exist for this type of space.

The philosophical approach is that the audio-visual hardware is stored and issued from here and minor maintenance is done here. The software is stored and issued here, but not created here. There are no studio or darkroom facilities contemplated in the Library.

The Audio-Visual Aids section is described as follows:

Purpose

The aim of the audio-visual services for the Health Sciences Library is to house and dispense audio-visual material and hardware.

Character

The character of the space is difficult to define because of constantly changing nature of audio-visual materials and their mode of presentation.

Therefore, the most important concern when planning audio-visual areas is flexibility: flexibility in space allocation among the various functions which comprise the audio-

visual service (partition layout) and flexibility in the use and availability of mechanical services.

Functions Included

Functions to be housed in the Audio-Visual Aids area include:

AV Materials Storage
AV Hardware Storage and Maintenance
Reader Space
AV Staff Space
AC Service Desk and Catalogue
AV Materials Preview Room

AV Materials (Software)

Audio-visual materials will not be made in spaces provided for audio-visual services in the Library, but will be made in the audio-visual production center, which should have a direct physical relationship with the AV service space in the Library, but not be part of the Library.

Currently, the most typical forms of audio-visual material used in libraries are: microfilm, microfiche, microcards; video cassettes, audio cassettes; slides, tapeslides and firmstrips.

Emphasis on different forms of audio-visual material in constantly changing: i.e. use of color microfiche, while impeded because of the high cost of color processing, is increasing, because of the high quality of color "trueness". Many texts are being published with black and white photos as part of the text while a color microfiche is included (tucked away in a pocket on the inside of the cover) for closer examination and study.

The use of filmstrips, while once quite prevalent, is decreasing. The use of videotape, slide-tape, etc. is currently increasing.

AV Storage (Software)

Because of the different forms of AV material currently used, various types of storage systems will be used. These systems include both typical 7-shelf stacks (for video tapes and slide tape programs, for example) and special cabinets (for microfilm or individual slide storage, for instance). The space allocated to materials storage must be large enough and flexible enough to allow for increases in the collection as a whole, for changes in the emphasis of one form as opposed to another, and for changes in the method of storage.

AV Storage (Hardware)

Hardware storage should have direct access to technician's workshop, where routine maintenance and repair will be performed.

AV Staff

Space should be provided for the AV staff in close proximity to the AV service desk, so as to provide better control without increase in staff.

AV service desk handles dispersement of AV materials and equipment and its staff supervises AV service area.

AV Preview Room

Preview Room is provided to allow students and faculty members to see what types of AV materials are available, their format, relevance to a particular user's needs, etc. Preview Room will also be used by faculty to evaluate AV material submitted by microfilm publishers for their approval, opinion, etc., and assemble AV material used by students as supplements to lecture and lab courses.

SUPPORT AREAS	AREA (S.F.)
Administration	
1) Staff and Reception	290
2) Conference (6 persons)	210
	500
Main Catalogue	
1) Card Cabinets and Public Space	300
Circulation/Reserve	
1) Circulation/Reserve Staff Space & Service Desk	340
2) Service Desk (Public Space)	400
	740
Reference	
1) Reference Staff	1,360
2) Computer Space	105
3) Service Desk (Public Space)	200
	1,665

SUPPORT AREAS	AREA (S.F.)
Technical Services	
1) Technical Services Staff	555
2) Book Processing Space	80
3) Clerical Storage	150
	785
Audio-Visual Aids	
1) Audio-Visual Aids Staff	180
2) Audio-Visual Service Desk	80
3) Audio-Visual Technician Workshop	300
4) Audio-Visual Preview Room	150
5) Audio-Visual Catalogue	150
	860
General	
1) Exhibit Space	1,500
2) Exhibit Preparation Space	325
3) Copy Service	500
4) Coin-Operated Copy Machines	500
5) Staff Lounge	500
6) Shipping and Receiving	200
7) Custodian	200
	3,725

ADJACENT AREAS

TABLE 6

During the course of developing the program for the Health Sciences Library, it became apparent that the Library should be adjacent to several areas. These areas, although important to the total success of the Library, could not legitimately be put in the Library program. These adjacent or proximate spaces are as follows:

1. 10 classrooms with 30 students capacity (7,500 square feet)

2. Divisible Auditorium - 500 seats (5000 square feet)

3. Audio-Visual Productions Space

4. Student Lounge

These spaces are listed with the assumption that the Health Sciences Library would be part of a larger building. A building including the Adjacent Areas listed above and the possible other areas such as a Faculty Club, Student Center, additional classrooms, Health Sciences Center Administrative space and research facilities.

ADJACENT SPACE*	AREA (S.F.)
Surge Classrooms and Auditorium	
1) 10 Classrooms with 30 student capacity, divisible into 2 - 15 student seminars each 750 x 10 =	7,500
2) Divisible 500 Seat Auditorium, 500 x 10 =	5,000
3) AV Production Space	to be determined
4) Student Lounge	to be determined
TOTAL	to be determined

* Adjacent spaces are those which interviews revealed as desirable for supplementary library usage. Adjacent spaces have direct access to the library, but are not part of the library space per se.

FOOT NOTES
Recommended Seating for Graduate or Research Libraries

(1) 70% carrels or individual seating
15% flat tables

(2) 10% group study rooms

This approximate distribution reinforced by Faculty/Staff/Student interviews at Tufts-New England Medical Center.

ADJACENT SPACE

(3) The Cornell University College of Veterinary Medicine Library has the following collection:

Total Volumes	61,000
(-) Medical Volumes	20,000
Veterinary Volumes	41,000
Bound Periodicals	
66% of 41,000	
Volumes	27,000
Books	14,000

(4) Tufts at outset will have no base library of periodicals, but if back copies of periodicals are purchased like books, maybe as many as 15,000 back journal volumes will be acquired.

(5) Assumed basic volumes for Nutritional Research Center.

(6) Columbia University Medical Library has Audio-Visual Space of 13,400 square feet, including many 100 square foot spaces defined by movable walls.

(7) Net Area 56,895

Allowance for Walls, Toilets, Mechanical Space, etc. Net Area x 40% = 22,758

Gross Area 79,653

TOTAL PROJECT (7) 79,653

500 SEAT DIVISIBLE AUDITORIUM

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ADJACENT AREAS

SUMMARY PROGRAM AREAS

TABLE 7

The following table gives a summary of all the categories of space in the Library. The total net square footage gives a summary of the indivual space requirements. To the net area one must add a certain "area mark-up" to provide for walls, stairs, elevators and other circulation spaces, toilet rooms, janitors closets, mechanical rooms, storage and other support spaces.

HEALTH SCIENCES LIBRARY PROGRAM

SPACE NAME	MATERIAL		STUDY SPACES -- SEATING										STAFF		PUBLIC	TOTAL
	UNITS VOLS UNLESS NOTED	AREA	CARRELS		TABLES		LOUNGE		STUDIES		TOTAL					NET
		SQ.FT.	NO.	SQ.FT.	NO.	SQ.FT.	NO.	SQ.FT.	NO.	SQ.FT.	NO.	SQ.FT.	NO.	SQ.FT	SQ.FT.	SQ.FT.
CATALOG	--	--	--	--	--	--	--	--	--	--	--	--	--	--	300	300
PRINTED MATERIAL																
CIRCULATION/RESERVE	3,000	350	--	--	--	--	--	--	--	--	--	--	4	340	400	990
REFERENCE/BIBLIOGRAPHY	3,500	350	--	--	20	--	--	--	--	--	20	500	14	1,465	200	2,515
INDEXES/ABSTRACTS	6,000	1,500	--	--	50	1,250	--	--	--	--	50	1,250	--	--	--	2,750
GENERAL COLLECTIONS	216,000	18,000	300	11,250	40	1,000	--	--	93	4,380	433	16,630	--	--	--	34,630
HISTORY OF MEDICINE	5,000	500	--	--	4	100	4	120	--	--	8	220	(1)	80	--	800
LEISURE	2,000	135	--	--	--	--	25	750	--	--	25	750	--	--	--	885
CURRENT PERIODICALS	2,100 Titles	1,050	--	--	28	700	26	780	--	--	50	1,380	--	--	--	2,430
NON-PRINTED MATERIAL																
AUDIO-VISUAL	--	3,000	25	1,125	--	--	--	--	85	2,675	110	3,800	4	560	300	7,660
SUPPORT AREAS																
ADMINISTRATION	--	--	--	--	--	--	--	--	--	--	--	--	2	400	100	500
TECHNICAL SERVICES	500	50	--	--	--	--	--	--	--	--	--	--	4	785	--	835
EXHIBIT PREPARATION	200	25	--	--	--	--	--	--	--	--	--	--	(3)	300	--	325
EXHIBITION SPACE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1,500	1,500
SHIPPING & RECEIVING	500	50	--	--	--	--	--	--	--	--	--	--	--	--	150	200
COPY SERVICE	--	--	--	--	--	--	--	--	--	--	--	--	1	100	200	500
COPY MACHINES	--	--	--	--	--	--	--	--	--	--	--	--	--	--	500	500
STAFF LOUNGE	--	--	--	--	--	--	--	--	--	--	--	--	--	500	--	500
CUSTODIAN	--	--	--	--	--	--	--	--	--	--	--	--	1	200	--	200
TOTAL UNITS	--	--	350	--	150	--	72	--	153	--	696	--	32	--	--	--
TOTAL NET SF	--	24,785	--	13,250	--	3,250	--	2,160	--	8,180	--	24,530	--	4,930	3,650	50,020
TOTAL GROSS SF																81,228

PROXIMATE SPACES		
SURGE CLASSROOMS	(10 Classrooms with 30 student capacity, divisible into 2 - 15 Student Seminars @ 750 x 10)	7,500
AUDITORIUM	(Divisible 500 Seat Auditorium 500 x 10)	5,000
AV PRODUCTION SPACE		
STUDENT LOUNGE		
TOTAL NET SF		12,500

Estimated Project Cost:
(Spring 1978 prices
City of Boston,
Spring 1977 prices plus 10%)

1. Building Construction 81,228 sf = 82,000 sf 82,000 sf x $76/sf =	$6,232,000
1.1 Special Foundations Allowance	300,000
	$6,532,000
1.2 Construction Contingency (5% of 1. and 1.1)	325,000
2. Furnishings and Equipment (15% of 1.)	935,000
3. Architects Fee (8.2% of 1., 1.1 and 1.2)	569,000
4. Miscellaneous Expenses (Reimbursable expenses, borings, surveys, legal, clerk of works, etc.)	90,000
TOTAL ESTIMATED PROJECT COST	$8,452,000

APPENDICES

The information given on the following pages is basic background information concerning components of the library and basic statistical information concerning other library collections.

This material is included to make the library program more useful.

CARREL SPACE REQUIREMENTS

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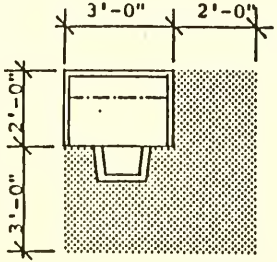
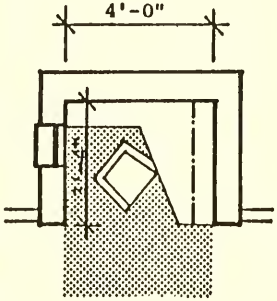
A1

TYPICAL CARREL COMMERCIAL

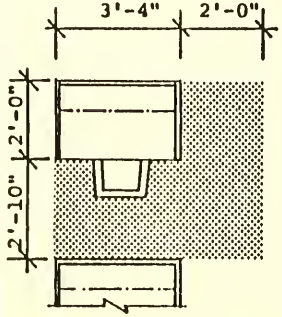


SF: 15.0
w/circulation:
25.0 SF

WESSEL LIBRARY

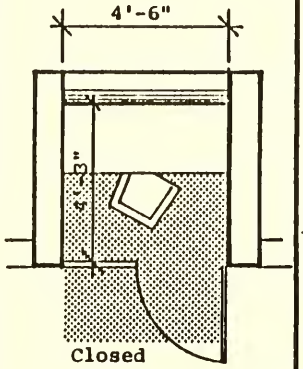


Semi-Closed
SF: 13.32
w/circulation:
21.32 SF

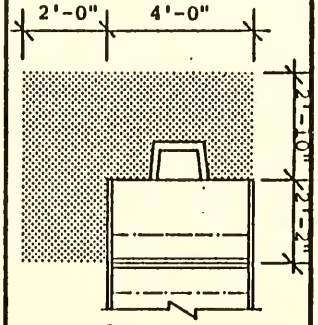


Open
SF: 15.98
w/circulation: 25.58 SF

COUNTWAY MEDICAL

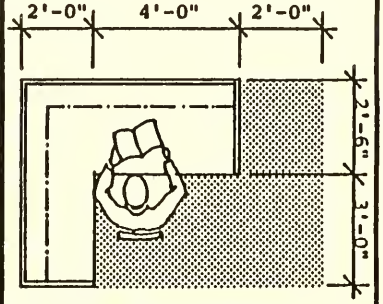


Closed
SF: 19.13
w/circulation:
28.13 SF



Open
SF: 20.0
w/circulation: 30.0 SF

PROPOSED: HEALTH SCIENCES LIBRARY

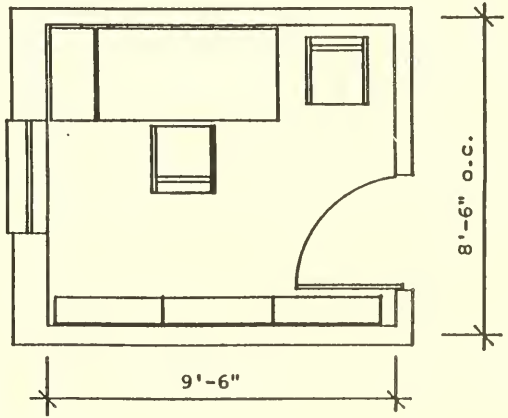


Shelf & Light

.Module used for both open and closed study carrels.
.Module suitable for AV use.

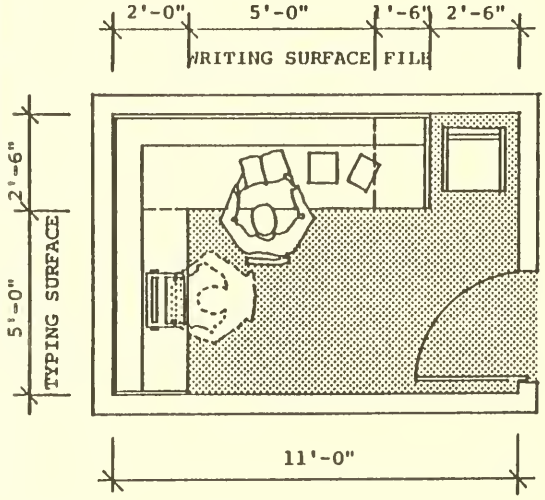
SF: 33.0
w/circulation: 44.0 SF

Source: Planning Academic and Research Libraries
Metcalf
+
Earl R. Flansburgh & Associates, Inc.



SF: 80

Source: Planning Academic and Research
Libraries
Metcalf



SF: 82

Source: Planning Academic and Research
Libraries
Metcalf
+
Earl R. Flansburgh & Associates, Inc.

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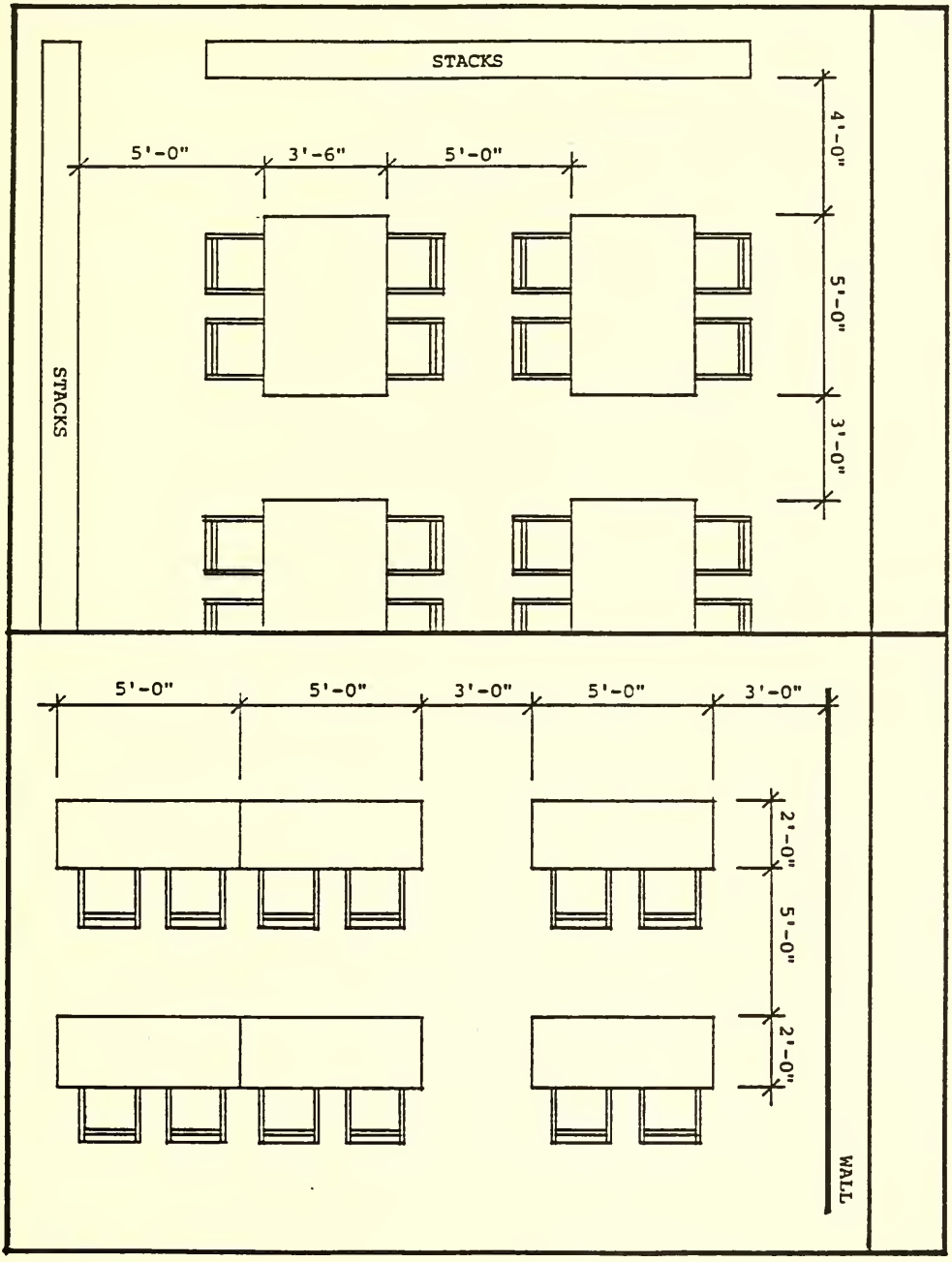
FACULTY STUDIES

A2



A3

SPACE ALLOCATIONS FOR TABLE SEATING

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SIMILAR LIBRARIES:
CAPACITIES & AREAS

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COMPARISON OF VARIOUS UNIVERSITY AND SCIENTIFIC LIBRARIES

	HEALTH SCIENCES LIBRARIES		TYPICAL ACADEMIC (LIBERAL ARTS) LIBRARY
Name of Library	Countway Medical Library, Harvard Univ., Boston	Health Sciences Library, Columbia Univ., New York City	Wessel Library, Tufts University Medford
Ground Coverage	17,000 SF	--	42,715 SF
Gross Floor Area (including celler)	95,000 SF	87,000 SF	135,575 SF
Capacity (Volumes)			
a. Total Capacity	750,000	425,000	500,000
b. Volumes on Hand	425,000	--	--
c. Volumes Directly Accessible	375,000	335,000	450,000
Capacity (Seats)	700	719	800
Capacity (Staff)	90	36	45
Reading Rooms & Open Shelf Library	45%	--	49.5%
Locked Cabinets	--	--	--
Hall, Catalog & Circulation Desk	4%	9.8%	8.5%

COMPARISON OF VARIOUS UNIVERSITY AND SCIENTIFIC LIBRARIES
PAGE 2

Name of Library	HEALTH SCIENCES LIBRARIES		TYPICAL ACADEMIC (LIBERAL ARTS) LIBRARY
	Countway Medical Library, Harvard Univ., Boston	Health Sciences Library, Columbia Univ., New York City	Wessel Library Tufts University Medford
Lecture & Exhibition Areas	--	--	1.5%
Picture & Sound Rooms (AV)	--	14%	3.5%
Technical Services	6%	7% approx.	6.5%
Employee Facilities	3%	2% approx.	6.0%
Reserve	16%	--	11.0%
Locked Stacks	2%	--	2.5%
Lecture & Conference Rooms	10%	--	--
Administration	11%	--	9.0%

HEALTH SCIENCES LIBRARIES: COMPARISON OF COLLECTION SIZES AND TOTAL NET AREAS OF VARIOUS HEALTH SCIENCES LIBRARIES

NAME OF LIBRARY		COLLECTION SIZE - VOLUMES	AREA: TOTAL NET SQ.FT. ENTIRE LIBRARY
California:	Stanford	256,222 volumes	29,000 Sq.Ft.
Canada:	British Columbia	201,323 volumes	65,042 Sq.Ft.
Maryland:	John Hopkins	237,208 volumes	59,752 Sq.Ft.
Michigan:	University of Michigan	216,235 volumes	24,000 Sq.Ft.
Minnesota:	University of Minnesota	246,133 volumes	72,000 Sq.Ft.
Massachusetts:	Proposed Tufts University Health Sciences Library	231,750 volumes	58,000 Sq.Ft.

Source: "Medical Library Statistics 1975-1976" compiled by Donald D. Hendricks Library, University of Texas Science Center, Dallas, Texas

Appendix 8

Animal Facility Review

The current Division of Laboratory Animal Medicine utilizes approximately 11,600 gross square feet of decentralized space to support the biological teaching and research efforts of nearly 120 instructors and principal investigators. This space is distributed essentially equally among buildings which are the property of T-NEMC, Inc. and those which are the property of Tufts University.

The animal facilities can be classified as decentralized, conventional animal space. A small portion of the 26 animal rooms could function as barrier rooms, but due to the current census, this practice cannot be followed. As a result, the labor requirements to maintain the facilities is increased. Currently, more than 13,000 animals are housed in these facilities. The distribution of animal species is described in Table 1 (attached).

In addition to the individuals described previously, there are a small number of investigators and instructors who maintain programs at other institutions because of constraints on certain types of animal space at the Center. Most notable among these individuals are researchers who have large programs at the New England Regional Primate Center and members of the Department of Surgery who maintain large animal research programs at Boston University, St. Elizabeth's Hospital, etc. The amount of animal space currently being utilized at other institutions can conservatively be estimated at 1,500 gross square feet.

Concerning the numbers of students receiving instruction supported by the animal facilities, the first three years of the Basic Sciences Curriculum for both Veterinary School and Medical School are supported by these facilities. Instructional programs in surgery, microbiology, physiology and laboratory animal medicine can be performed as a result of this resource. Additionally, approximately 100 animal care and research technicians are trained annually in the facilities. This technical support staff represents the means by which the research, and to a minor extent, the professional student instruction programs are maintained.

Lastly, the administrative base for the program centers in approximately 1,000 gross square feet of space not directly associated with any of the animal facilities. This amount of space represents a stable base of support which can easily accommodate a two- or three-fold expansion of the animal space.

TABLE ONE

DISTRIBUTION OF ANIMAL SPECIES

(July 1982)

Species	Census
Rabbits	187
Mice	11,886
Rats	907
Guinea Pigs	74
Hamsters	6
Pigeons	15
Dogs	10
Baboons	8
Rhesus Monkeys	15
Squirrel Monkeys	3
Pigs	4
TOTAL NUMBER OF ANIMALS	13,115

The deficiencies in the quality or quantity of space which can currently be associated with the animal facilities program include, but are not limited to the following:

- Insufficient amount of certain types of animal space to support currently funded research. Large laboratory animal programs (e.g., primates, minipigs and dogs) must be performed at other institutions.
- No barrier facilities are currently available to isolate Geographic Medicine and Infectious Diseases research programs. This research is being conducted in conventional animal space using labor-intensive procedures to compensate for facilities deficiencies.
- The survival surgery facilities available for experimental surgery and student training programs are inadequate. These programs are performed in a large open facility with no barriers to ambient atmosphere contamination.
- There are an insufficient number of animal rooms to permit relocation of animal colonies and decontamination, or simply isolation of individual animals or colonies.
- The HVAC systems in all animal facilities are inadequate in terms of temperature and humidity controls. Also, a large number of the animal rooms have obsolete ventilation systems which permit a ventilatory "short-circuit".
- Primates are housed on a research floor which has direct access to a patient floor of an adjacent hospital. The potential zoonotic and public health hazard posed by this situation is highly undesirable.

There are other deficiencies of lesser importance, but collectively they indicate that the program can only marginally comply with NIH standards. This statement has been periodically reinforced by Federal and Commonwealth inspection agencies which have cited these deficiencies. DLAM has always managed to correct a few specific deficiencies on the short-term, but the ability to maintain the program in general compliance has not existed since 1979.

3993 058

BOSTON PUBLIC LIBRARY
3 9999 06315 717 4